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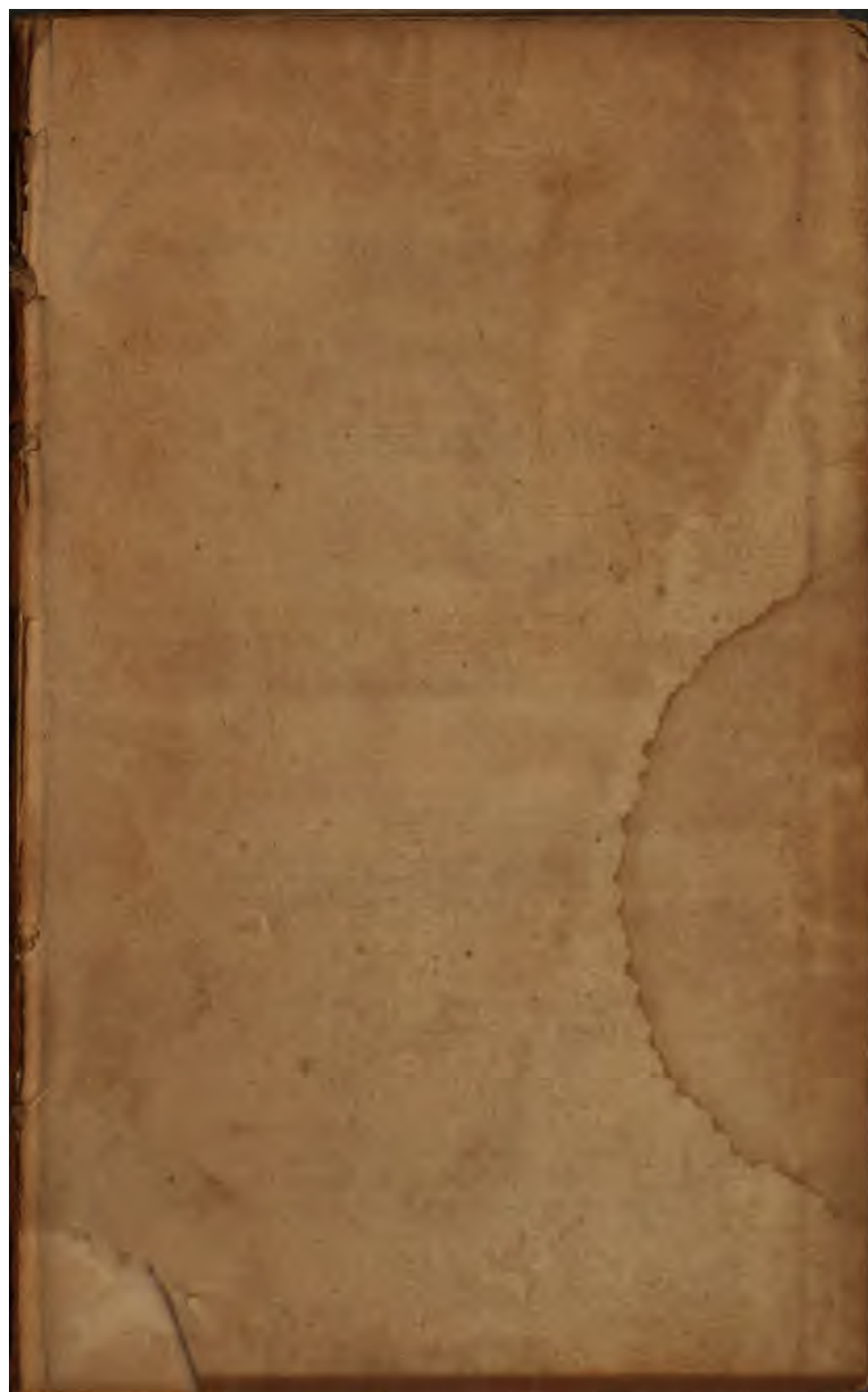
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THE
ECLECTIC REPERTORY,

AND
ANALYTICAL REVIEW,

Medical and Philosophical.

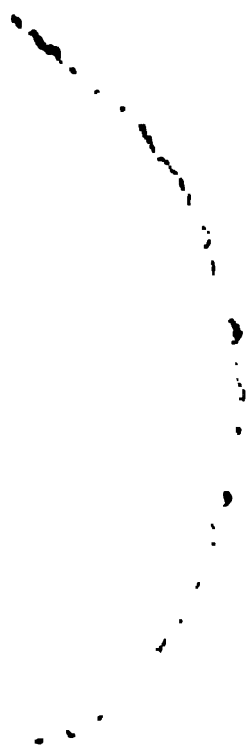
EDITED BY A SOCIETY OF PHYSICIANS

.....*Apis matinx*
More modoque.—*Hæ.*

Nullis unius disciplinx legibus adstricti, quibus in philosophiâ necessariò paremus, quid sit in quaque re maxime probabile semper requiremus.—Crc.

VOL. V.

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THE
ECLECTIC REPERTORY
AND
ANALYTICAL REVIEW.

VOL. V.	JANUARY, 1815.	No. I.
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SELECTED PAPERS.

Observations on the Vascular Appearance in the Human Stomach, which is frequently mistaken for Inflammation of that Organ. By JOHN YELLOLY, M. D. Physician to the London Hospital.

[From the London Medico-Chirurgical Transactions for 1813.]

IT must have happened to every one accustomed to the examination of morbid bodies, to see appearances of vascular fulness in the villous coat of the stomach. Such appearances have very frequently been referred to inflammation; but they have probably been but little studied; because, in dissections, the stomach is seldom opened, unless the attention be particularly directed to that organ, either from something remarkable in its external appearance, or some particular symptom affecting it, which may have been the subject of observation during life. I have several times been present at the examination of bodies, where the vascularity of the villous coat of the stomach was so considerable, as even to give rise to suspicions, that

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this appearance had been produced by the agency of something deleterious. In some remarkable cases, too, which fell under my own immediate inspection, (particularly one of apoplexy, and another of hydrothorax,) the phenomena now mentioned, existed to a very considerable degree, without there having been present, during life, any symptom which could make an affection of the stomach looked for.

I was therefore induced to embrace frequent opportunities of viewing the state of the inner surface of the stomach; and I so often found in it the appearances alluded to, as to incline me to imagine, that the opinion which is commonly entertained, of their being marks of disease, is not well founded. I thought it, however, desirable to make a continued series of examinations as to this point, in subjects taken indiscriminately, and therefore without any reference to the disease of which they might have died; hoping, by this means, to obtain such a portion of evidence, as might warrant some deduction, as to the ordinary appearances of the villous coat of the human stomach, in the dead body. I shall therefore lay before the Society, an account of twenty successive dissections, made by me, with a more particular view to the state of the stomach: and shall then give the appearances which that organ presented, in the bodies of five criminals, who forfeited their lives to public justice, and where there might be expected to be as little deviation as possible, from natural and healthy structure, and appearance.* The twenty dissections were principally made in cases which occurred at the London Hospital, under the care of my colleagues, (the physicians and surgeons of that establishment,) or myself; and the appearances were generally noted down by me at the time of inspection. I shall give one of them separately, but as I am aware that a detail of cases, where there is no material diversity in the individual particulars, is very tedious, I shall reduce the others to a tabular form.

It may be proper to remark, that in removing the stomachs,

* It will be obvious, from the dates, that several of the cases and observations have been added since this paper was communicated to the Socy.

for the purpose of examination, a ligature was made at each extremity, and a portion of the œsophagus and duodenum included within it; and in order that no unnecessary pressure should be made on the tender villous coat in the inversion, an incision was made in the anterior part of the stomach, from the extremity of the duodenum, through the pylorus, of sufficient size to admit of its being readily inverted.

John Bate, aged thirty-six, porter, was admitted into the London Hospital on Feb. 23, 1813, with general dropsy; and after the unsuccessful employment of various means for his relief, he gradually sunk, and died on May 11. There had been no affection of the stomach. He was opened on the day of his death.

In both cavities of the thorax, there was a considerable quantity of bloody serum, and some also in the pericardium. The heart was large and firm; and there was a small and slight adhesion of it to the pericardium. Some bloody serum was found in the abdomen; and a strong band attached the lower part of the ilium to the peritonæum contiguous to it. The spleen was considerably larger than usual; and it adhered extensively and strongly to the diaphragm, and slightly to the colon. Its substance was firm; and the whole of its external surface (that towards the ribs) was covered with a thin layer of white, smooth, cartilage.* The liver was natural in appearance; but the cystic bile was very pale. Nearly the whole of the great end of the stomach, on the posterior part, including a surface of somewhat a round form, and of about five inches by four in dimension, was of a bright crimson colour, which arose from very numerous points, as if of extravasation, very near the internal surface of the villous coat, and a slight regular vascularity. Similar points, well defined, and of various sizes, were seen in other parts of the stomach, particularly near the pylorus. The plicæ were numerous, near the pylorus, and towards the left inferior extremity of the greater curvature.

* A similar affection of the spleen is described in Baillie's *Morbid Anatomy*, p. 256.

Name, &c.	Died.	Examined.	Disease.	Appearances of Villous Coat of Stomach.
1 Taylor, about 55, porter.	1813. March 30.	1813. April 1.	Apoplexy; effusion of blood in Pons Varolii. Was subject to rheumatism. No affection of stomach.	Considerable portion of great end very vascular, and with occasional appearance of extravasation, in form of small points.
2 James Murray, aged 47, seaman.	April 13.	— 13.	Severe accident in the leg, making amputation necessary. No affection of stomach.	Lesser curvature, for about four inches by three, and a small irregular portion round the cardia, with considerable, and rather florid vascularity. Points of extravasation, in several parts of great end, and pyloric portion.
3 Dan. M'Laughlin, aged 47, labourer.	— 14.	— 16.	Convulsive fits, following, in 3 days, amputation of the leg for an old ulceration, coming on at short intervals, and producing stupor. No affection of stomach.	One-third of the superficial dimensions, comprising nearly the whole of the great end, and a portion of the lesser curvature, exhibited minute purple vessels, without regular junction. Here and there points of extravasation.
4 Jer. Davis, aged 19, labourer.	— 14.	— 16.	Tetanus, coming on with lock-jaw, on April 9th, without apparent cause. No affection of stomach.	Slight extravasation in irregular points, in lesser curvature and great end. Oesophagus very vascular.

Vascular Appearance in the Stomach.

5

No.	Name, &c.	Died.	Examined.	Disease.	Appearances of Villous Coat of Stomach.
5	Thomas Holbird, aged 40, labourer.	1813. April 27.	1813. April 29.	Pulmonary consumption. No affection of stomach.	Lesser curvature, and various small portions in other parts, particularly at inferior part of great end, very vascular.
6	William Somerville, aged 56, labourer.	— 28.	— 29.	Extravasation of urine into perinæum from stricture; and consequent gangrene. No affection of stomach.	Slight crimson blush over principal part; and portions of distinct, and well defined vascularity, in several places.
7	Andrew Bailey, aged 26, seaman.	— 30.	May 1.	Pleuritis following amputation at shoulder joint, on account of a severe bruise. A little vomiting before death.	Lesser curvature, with four square inches of minute vessels or points. Similar appearances in some other places.
8	Emanuel Francis, aged 40, seaman.	May 1.	— 1.	Pulmonary consumption. No affection of stomach.	Two square inches of lesser curvature, and a portion at great end, with minute florid vascularity, and slight pointed extravasation.
9	Johan Dichtmeyer, aged 31, shoemaker.	— 2.	— 3.	Pulmonary consumption. No affection of stomach.	Great end, with dark crimson, uniform tinge. Lesser curvature, three inches by two, and neighbourhood of pylorus had portions of distinct vascularity, with a few extravasated points.

Name, &c.	Died.	Examined.	Disease.	Appearances of Villous Coat of Stomach.
Amin Foy- aged 53, it porter.	1813. May 9.	1813. May 11.	Pleuritis supervening on severe catarrh, to which he was subject. Occasional pains in stomach for some years.	Reddish blush over principal part. Some of the plicæ near the pylorus, much elevated, dark-coloured and semi-cartilaginous.
John Bate, aged 36, porter.	— 11.	— 11.	General dropsey.	Case given above, p. 3.
Thomas Gingham, aged 65, labourer.	— 14.	— 15.	Compound fracture of leg. No affection of stomach.	The lesser curvature, and much of both anterior and posterior surfaces livid. Some vascularity and points near the pylorus.
Mary Roston, aged 27.	— 19.	— 21.	Ulcerated leg. No affection of stomach.	Very obscure vascularity near the pylorus.
Thomas Woodfield, aged 47, watch-maker.	— 20.	— 21.	Pulmonary consumption; with strictures, and enlarged prostate. No affection of stomach.	Two square inches of lesser curvature, and principal part of great end, amounting, in the whole, to one-half the superficial contents, with sometimes florid, but generally blackish purple vascularity, for the most part distinct. Some florid vessels also near the pylorus, and in the duodenum.
Joseph Francis, aged 45, seaman.	— 21.	— 21.	Compound fracture of leg, making amputation necessary. Slight sickness on last day.	Nearly the whole surface of a bright red colour, from small points; but there was little distinct vascularity.

Vascular Appearance in the Stomach.

7

No.	Name, &c.	Died.	Examined.	Disease.	Appearances of Villous Coat of Stomach.
16	James Sheppard, aged 22, labourer.	1813. May 25.	1813. May 25.	Ulceration of larynx, and of villous coat of small intestines. No affection of stomach.	No vascularity.
17	Eman. Evans, aged 70, labourer.	— 26.	— 27.	Peritoneal inflammation from punctured bladder. No affection of stomach.	Extensive florid vascularity in minute ramifications.
18	Wakefield, middle-aged man.*			Pulmonary consumption.	A considerable space on the posterior surface below the cardia, and a smaller at the lesser curvature and anterior surface, florid, and consisting partly of points and partly ramifications. Lines of fine vascularity along the plicae.
19	Robert Gowlett, aged 34, labourer.	June 17.	June 19.	Irregular protracted fever. Dyspeptic complaints for some years; and latterly, irritability of stomach.	Almost whole surface with florid vascularity; sometimes in distinct vessels, sometimes in pointed extravasations.
20	Henrietta Hatt, aged 34.	— 26.	— 27.	Schirrous uterus; large intestines contracted. Old syphilitic complaints.	Slight appearance of rather dark red vascularity Old and points, both in the lesser curvature and great end.

* Some mistake arose as to the name and the description of this man, at the time of dissection, which I have not been able to rectify.

Before I make any remarks on the cases which have been given, and the appearances which they offer, I shall proceed to lay before the Society a description of the state of the stomach in five malefactors, who suffered death for murder, and who, before their execution, were in good health.*

CASE I.

Philip Nicholson, a man of about thirty years of age, was executed at Penningden Heath, near Maidstone, on the 23d of August 1813, at two o'clock in the afternoon. The body was taken to Bromley the same night, and was opened in my presence, and the stomach examined by me, on the following day, at 3 o'clock in the afternoon.

The whole of the abdominal viscera were loaded, as if by minute injection, with dark-coloured blood. Here and there, however, there were florid vessels, which were distinctly traceable into dark-coloured ones.

The stomach had its external vessels very turgid. It had no fluid contents; but on inverting it, after an incision was made in the anterior part, through the pylorus, the whole cavity was found lined with dark-coloured, clotted blood, which was pretty firmly attached to the villous coat and its mucus, and came off, but with some little difficulty, on putting the whole into water. Much of it, however, still continued to hang about the plicæ, at the great end, though the other parts were freed. The plicæ were distinct over the whole stomach, but not much elevated. Where the blood was washed off, it discovered the whole surface of the villous coat of a red colour; dark, where a portion of the blood continued to adhere; but florid, where it had been separated. The florid appearance was produced by minute vessels, which were, in general, distinct; but here and there in points, and occasionally in apparent daubs, consisting

* I was indebted to the kindness and liberality of several professional friends, for the opportunity of these examinations.

of extravasations, more or less extensive, and when more closely examined by a glass, divided into smaller portions of extravasation. The vascularity was unequal, being sometimes in irregular lines, with small portions of the proper straw-coloured hue of the villous coat interposed. Where the straw colour was pretty well marked, (which was in very few places,) there were still seen appearances of faint, and minute vascularity, in the substance of the villous coat, which imparted a very obscure red tinge to the straw-coloured hue.

On dissecting off the villous coat, its inner surface was found to be covered with numerous vessels, which were connected with larger ones, and were traceable into the substance of the villous surface.

The stomach was reverted; and on examination the following day, it was found, in many places, to have lost the florid vascular appearance above mentioned, and to have become of a pretty uniform crimson hue. It was then put into rectified spirit; but in the course of a few hours, was deprived, not only of the slight remains of vascularity which it possessed, but altogether of its sanguineous hue, assuming a brown tint, which it still preserves.*

CASE II.

Charles Masureaux, a young French prisoner, was executed at Gillingham in Kent, on Monday the 23d of August, 1813, early in the forenoon. The stomach was taken out on the Tuesday, was sent to me in London on the Wednesday evening, and was examined on the Thursday morning.—It had been tied up at both openings, and a portion of the contents left in it. It was transmitted in a jar, at my request, without spirit or other fluid put up with it.

* Nicholson was reported to have died unusually hard, and to have been greatly convulsed. *Times Paper* of Aug. 25.

The external surface was very vascular, and of a light purple hue.—There was a large spot near the pylorus, and another in the greater curvature, of a green colour, which extended through the whole substance of the stomach; but there was no diminished cohesion in these parts. The stomach contained about three or four ounces of bloody, thick, and somewhat frothy fluid. The whole of the villous coat (with the exception of the green spots, and some dark coloured streaks, which answered nearly to the plicæ of the stomach,) was of a bright crimson colour. No vascular appearance was perceptible in any part of the stomach, except in one spot near the pylorus, and in another in the lesser curvature, near the cardia, where a distinct portion of vascularity was seen at the extremity of the villous coat. Very obscure vessels were observable between the villous and muscular coats, on dissecting off the former, at various places.

CASE III.

William Cornwall, aged about 25, was executed at Woodford, at 11 o'clock in the forenoon, of Monday the 9th of August, 1813. The body was conveyed to town on the same day; and was opened in my presence, and the stomach examined by me, at half past two o'clock on the following afternoon.

The whole surface of the body, (but particularly the lower extremities) had on it numerous small vesications in the form of wheals, without redness, of about an inch and a half in length, and a tenth of an inch in width.

The large veins, on the external surface of the stomach, were most of them moderately distended with blood, and the ramifications went to considerable minuteness, and were most apparent in the smaller curvature. The whole of the intestinal canal was minutely injected with blood, which was, for the most part, of a dark crimson, or purple, but here and there, of a florid hue.

The stomach had no remains of food in it; but it contained much thick mucus, which adhered to the whole inner coat. There were florid patches of vascularity in various parts of the whole inner surface of the stomach; which were most remarkable in the posterior part, towards the left side, and in the lesser curvature, for about two inches from the cardia. The general character of the vascular appearance, was similar to that mentioned in the case of Nicholson.

CASE IV.

John Denton, aged 45, was executed at the Old Bailey, on Monday Sept. 20, 1813, at eight o'clock in the forenoon, and was opened in my presence, and the stomach examined by me, at twelve o'clock at noon of the same day.

The small intestines were very vascular, but the colon was free from any appearance of vessels; and the stomach was not unusually vascular in its external surface. There was a strong contraction, at about one third of the distance between the pylorus and the left extremity of the stomach, making a very well marked separation between the pyloric and cardiac portions. Several ounces of coffee-coloured fluid were found in the stomach. Plicæ were diffused over every part of its inner surface, except for about an inch and a half round the cardia: they were very much contracted at the place mentioned as separating the pyloric and cardiac portions.

The colour of the villous coat throughout was of a light crimson, varying slightly, however, in degree of brightness; sometimes being almost florid, and sometimes rather dark. Here and there, portions of a light straw colour occurred in streaks; but in these streaks very minute vascularity might be discovered by the naked eye, and better by a glass. The redness consisted of minute vessels, which rose up nearly to the surface of the villous coat, and diverged in still smaller branches, ending sometimes in a minute point, as if of extra-

villous coat, and in general appear to be greatest, where that membrane is the least firm and resisting. Careful dissection discovers a fine net-work of veins between the villous and the muscular coat, from which the minute vascularity of the former evidently proceeds. This is very often capable of being traced, through the semi-transparent mucous coat, into larger veins beneath, by gently stretching the mucous coat, so as to render it thinner. The arteries are always empty, or very nearly so.

The vascularity now mentioned, often possesses a starred appearance, from the circumstance of its spreading in minute vessels, continually ramifying into smaller ones, to very near the extremity of the villous surface. A slight degree of friction, with the point of a scalpel, will open the minute extremities of the vessels; but I have never observed, that even by squeezing the larger branches, in a retrograde way, effusion into the cavity of the stomach could be produced, so as to stain a white substance which might be applied to the villous surface.

An appearance, very similar to the vascularity now described, is easily produced by injecting the veins (when there happens to be but little blood in them) with red-coloured injection; in which case, the villous coat, to the naked eye, but still more when a magnifying glass of moderate power is employed, exhibits a branched, or slightly stellated form of vessels, so descriptive of those which are seen in the human stomach.* If the veins, when injected, contain blood, the blood is forced, by the injection, into more remote branches, and at last escapes by rupture.—An appearance, a good deal like this, also takes place by injecting the arteries; but the vascularity

* Isinglass, or calves foot jelly, rubbed up with a proper quantity of colouring material, was the injection employed. It was thrown in through a pipe fixed on the coronary artery or vein, by a syringe, which contained about an ounce. The stomach was inverted, the pyloric extremity tied, and the pipe brought out at the cardia, which was slightly enlarged, if necessary, and a ligature (as far as the pipes would admit,) placed on it. By this means, the flowing of the injection through the villous coat was kept under view.

now mentioned can be completely imitated, by forcing back with the finger, or the back of a scalpel, the blood from the larger branches of veins into the smaller ones, by which means a species of minute injection into the very extremity of the villous coat, most readily takes place. Where a few larger veins have been apparent, this effect can be produced without the least extravasation, to a considerable extent; more particularly when the coats are thin.

I have never been able to produce, satisfactorily, a passage of injection from the artery to the vein; either in the stomach or intestines. The termination of the artery in the vein, must be very remote in the villous covering; for when these vessels are filled by injections of different colours, they are found to run, side by side, as far as they are capable of being traced.

There is a very remarkable similarity in the appearances exhibited in the stomachs of each of the malefactors, whose cases are mentioned above; and a general resemblance apparent between them, and the stomachs of persons who have died of natural death. In the former, however, the vascular character is more universal, and more vivid; and there is, besides, a disposition to effusion of blood into the cavity of the stomach, which does not occur in the latter. These differences may readily be accounted for, by the circumstances in which the vascular system is placed, before the total cessation of life, in persons who die by hanging; for in them, the usual disposition to vascular fulness in the stomach, is increased by the loading of the venous system, which occurs in consequence of the difficult transmission of blood, from the right side of the heart, during suspension.

In considering the state of an organ after death, with reference to the circumstances under which it may have appeared during life, it is necessary to consider, that in the latter case, both systems of vessels are filled with blood; while, in the former, blood is found in the veins only, the arteries being nearly,

if not entirely empty.* It is likewise important to remark, that it is not from injections, that we can form any opinion as to the colour of parts, or the state of their circulation during life. Coarse injections will fill only large vessels; while fine injections will exhibit those which, like the vessels of the eye, are incapable, from their minuteness, of conveying red blood in the healthy subject. There is, besides, a considerable difference between the uniform colour of a living part, where the finest glass can discover no separation of vessels, and the vascular distinctness produced by injection.

These circumstances apply strongly to any deductions which we may endeavour to make, as to the usual state of the mucous coat of the stomach during life, from its appearance after death. It is, indeed, extremely difficult to form an adequate conclusion as to this point, and authors have given various opinions relative to it. By some it has been stated to be white;† by others to be reddish;‡ by others to be greyish, bordering upon yellow and red;§ clay-coloured or reddish;|| or strongly marked red.¶

I have frequently seen the human stomach soon after death, and in such parts of it as were free from vascularity, it had usually a light straw-coloured tinge:** but, from the analogy

* ——"et a morte semper, arteriæ magis et magis inaniantur, furtim et sensim, donec penitus albæ, et absque vestigio sanguinis sint, unaque cum membranis mesenterii pelluceant, a quibus non facillime distinguuntur." HALLER's Opera Minora, tom. I. p. 200.

If any blood were contained in the minute arteries, it would be extravasated in injecting them, which I have never seen to occur with the arteries of the stomach, though it sometimes happens, as I have already stated, with the veins.

† DUMAS, Principes de Physiologie, tom. iv. p. 241.

‡ CUVIER's Leçons d'Anatomie comparée, tom. iii. p. 353.

§ BOYER's Traité complet d'Anatomie, tom. iv. p. 337.

|| SÆMMERING de corporis humani fabrica, tom. vi. p. 220.

¶ BICHAT, Traité des Membranes, p. 44.

** In dogs which have been hung, I have seen it with a slight crimson blush nearly over its whole surface, which is most apparent at the plicæ, and

of the mucous covering of the mouth and fauces, and of the urethra, it is probable, that when circulation is going on in the stomach, its inner surface is of a pale red hue, arising from vessels so minute as to give an uniform colour, without any appearance of distinct vascularity.* After death, the arteries and minuter veins are almost wholly emptied of their contents, and thus the colour of the villous coat is removed; but by dissection it will generally be found, that fine vessels are discoverable in the cellular membrane, which is interposed between the villous coat and the muscular. The removal of the colour, if we may judge from the analogy of the mucous membrane of the mouth, takes place very speedily.

It is difficult to ascertain in what way vascular appearances, such as those described by me, originate. That they take place about the close of life, is highly probable; but I feel myself unable satisfactorily to account for the mode in which they are produced. They are wholly venous, as is also the vascularity seen in many other parts of the body after death; the arteries, to which the veins which are so distended, correspond, being generally empty. It would therefore appear, that there is a power capable of being exercised in the artery itself, which carries on the blood to the capillaries, or to the veins, after the further supply of fresh blood from the heart is stopped; and that there is thus a species of accumulation pro-

seems to consist of minute crimson points formed as if by the projection of minute straw-coloured villi on a red surface. This appearance, I apprehend, is in some degree dependent on the mode of death. In pigs, I have always seen it of a light straw colour, with a slight crimson blush over a part of its surface.

|| The colour of the villous coat of the stomach and intestines is much alike in the dead body; being in both a light straw colour. Bichat states generally, that the natural appearance of the former, (meaning of course in the living body,) is a strongly marked red; and he gives an instance of a wounded and inverted portion of intestine, in which there was the redness, 'qui caracterise cette surface dans l'etat naturel.'

duced in the veins, which is adequate to the production of the phenomena in question.*

In men who have been hanged, there is an obvious cause of accumulation in the veins; and the same cause seems to act, in a smaller degree, in cases of ordinary death. It operates also, in death by drowning; but I have had no opportunity of ascertaining whether, in this case, the same appearance of stomach is produced, as in suspension. The striking vascularity so often observable in that organ after death, in consequence of venous accumulation, seems to be, in a great measure, referable to the peculiar laxity of the medium in which its blood vessels are placed, and to the great number with which it is supplied. Hence, likewise, the disposition which it exhibits to effusion of blood, as well during life as in death, from suspension.

The different degrees of colour, from dark purple to florid, which I have noticed as being seen in the vessels of the villos coat of the stomach, appear likewise occasionally in the veins of the mesentery and intestines. They afford examples of arterial hue, or a certain portion of it, continuing in blood, some time after the reflection of an artery into a vein. There are many facts which prove, that this change of arterial into venous blood may, under some circumstances, be accelerated or retarded in the living body; and Mr. Hunter has observed, that there is generally a palpable difference in the degree of darkness of venous blood, taken at different distances from its source in the arteries; for instance, at the hand, and the bend of the arm.†

The precise circumstances under which arterial colour is preserved after death, are not altogether known. The florid

* 'Etenim ubi cor sanguinem allatum in arterias promovere non amplius valet, illa vis (elastica) ad urgentem in venas sanguinem sufficit. At si vis ista elastica simul cum vita perditus v. c. arteria in os mutatur, arteria quoque post mortem sanguine plena conspicitur.'

Sæmmering De Corporis Humani Fabrica, tom. 5. p. 64.

† HUNTER'S Treatise on the Blood, Inflammation and Gun-shot Wounds, p. 69.

hue seems to be an exception to that in which blood usually appears in the dead body; for there the arteries, (when they are not empty) as well as the veins, contain dark blood. This change from the proper colour of the blood contained in the arteries, is supposed, by M. Bichat†, to take place before death; for he is of opinion, that in most instances, for some little time previously to the extinction of life, the whole of the blood which circulates through the body, is dark; and that, where any surface after death is found to be florid, (and he instances the mucous membrane of the nasal fossæ as being occasionally so) it has continued in that state by means of its capillaries, which he conceives are not easily affected by changes which may have taken place in the circulation of larger vessels.

This conclusion, with regard to the capillaries, would merely provide for their continuance in the state in which they existed during life; but it is hardly reconcileable with the enlargement which, after death, is so palpably seen to have taken place in them, in the human stomach. Such enlargement can scarcely have been produced, except by a force sufficient to overcome the resistance made by the parietes of these minute vessels to the augmentation of blood; and for this force, it is difficult to look except to the arteries; particularly as those of middle and smaller size are, after death, found to be freed from blood. In this case, however, the blood last projected, might, if dark, have been expected to impart to such capillaries, a dark, instead of a light colour; which, in many instances, it has been seen, is not the fact.

The change from florid to dark coloured, or from dark to darker red, which, as I have observed, takes place in the colour of the minute vessels of the stomach, in the course of a short time, is in some degree analogous to that change, which Mr. Hunter has observed to occur, by rest, in the colour of arterial blood, whether contained in aneurismal sacs, in cellu-

† *Anatomie Générale*, tom. 2.

lar membrane in consequence of extravasation from wounded arteries, or in the brain after apoplexy.*

The diffused redness, to which I have stated that the distinct vascularity of the villous coat soon gives place, occurs in a longer or shorter time, without any obvious cause for such difference. It seems to be the effect of transudation from the coats of the containing vessels; for I have seen, on inverting a vascular stomach, extending it upon a flat surface, and keeping it moist and undisturbed, that a blush is communicated from both larger and smaller veins to the contiguous cellular membrane, which very gradually increases in extent: while such parts of the villous coat as possess minute vascularity, lose it under such circumstances; the interstices becoming coloured by the transuding fluid, so as to give the whole of the surface an uniform crimson or purple tinge. The effect mentioned, I have observed to commence, in a recent stomach, in the course of a day, or a day and half, but sooner in one which is less recent, though not at all putrid. Putrefaction will doubtless increase, but it does not seem at all necessary to transudation.—This diffusion of colour is, therefore, analogous to the transudation of the bile from the gall bladder, which is so very generally observed in the examination of bodies.†

The slight resistance which dead matter is able to give to a contained fluid, is proved (if more proof than what the gall-bladder affords is necessary) by the employment of any two fluids, which are nice tests of the presence of each other. Thus, in a portion of inflated recent intestine, when the mesenteric arteries are carefully injected with solution of prussiat of pot-

* HUNTER, l. c. p. 65.

† HALLER refers an appearance of transudation from the intestinal vessels of a female who died of erysipelas in the leg, to inflammation, though there is every reason to suppose that it occurred after death. "*Intestina flatu insigniter distenta, tota inflammata erant, non quod vascula unica distenderentur, sed quod cruor secundum totam longitudinem arbuscularum vasculosarum in cellulositatem effusus, lineam obscure rubentem, in vasis circumpositam efficeret.*"—*Opera minora*, tom. iii. p. 349, obs. 53.

ash, and the veins with solution of green sulphat of iron, no effect is perceptible for a short period; but very soon the blue colour is produced, in the whole course of both systems of vessels, to considerable minuteness, and at the same time. If the carotid artery, or a portion of intestine (both of them recent) be filled with either of those fluids, and tied, and the centre be made to dip into a small vessel containing a portion of the other fluid, it becomes very speedily tinged with blue precipitate, at the place of contact.

Are circumstances of vascularity affected by thinness of coats?—The coats of the stomach vary very much in thickness in their different parts; the whole substance being sometimes so thin at the great end, as readily to admit of making out through it, dark figures on a light surface. In one case of this kind, the weight of two oval portions of similar size varied about three fourths: the portion taken from the fundus amounting to $5\frac{1}{4}$ grains, while that taken from a part about midway to the pylorus (where this stomach seemed to be thickest) amounted to $22\frac{1}{4}$ grains. This stomach admitted the injection of its arteries close to the part where a ligature had been placed round the oval orifice, without extravasation; and another stomach allowed the injection to pass, with the same success, over a portion, which, to judge by figures seen through it, was equally thin.

The veins, likewise, when pressed backwards, minutely injected their smaller branches, just as has been described to take place, in ordinary circumstances of venous turgescence, without any effusion being produced into the cavity of the stomach; for the blood, in the minutest extremities of these vessels, was incapable of being wiped off, or of giving any tinge to a white surface applied to the villous coat in which they terminated. This last mentioned circumstance, I have likewise frequently remarked, in cases where the great end of the stomach was nearly as thin, as in the stomachs above mentioned, if not equally so. Where there was, however, the slightest cut

in the villous surface, the vessels were divided, and consequently effusion took place.

The difference of thickness which occurs between different parts of the same stomach, is produced by variations both in its villous and muscular coats; for I found that of two equal oval portions of the same stomach, one of which was taken at the great end, and the other near the pylorus, in the lesser curvature, the former, weighing six grains, had its villous coat consisting of $2\frac{1}{2}$ grains, and the peritoneal and muscular together of $3\frac{1}{2}$ grains; while the latter, weighing $19\frac{1}{2}$ grains, had its villous coat consisting of seven grains, and its peritoneal and muscular together, of $12\frac{1}{2}$ grains.* The thickness of the peritoneal coat appears to be pretty uniform; but that of the muscular and villous to vary, not only in different stomachs,

* It may be proper to mention, that the weight of the villous, and of the peritoneal and muscular coats of nine similar oval portions of this stomach, was taken with some care, the dissection being made after separation from the stomach. In three other similar portions, the peritoneal and muscular coats alone were taken, the villous having been dissected off previously to removal. The following are the weights in grains, viz.

Villous coat	-	$2\frac{1}{2}$	$4\frac{1}{2}$	5	$5\frac{1}{2}$	$8\frac{1}{2}$	$7\frac{1}{2}$	$7\frac{1}{2}$	7			
Peritoneal and muscular together.	}	$3\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$7\frac{1}{2}$	6	$8\frac{1}{2}$	$8\frac{1}{2}$	9	$12\frac{1}{2}$	$3\frac{1}{2}$	$11\frac{1}{2}$
		6	$7\frac{1}{2}$	$8\frac{1}{2}$	13	15	16	$16\frac{1}{2}$	$16\frac{1}{2}$	$19\frac{1}{2}$		$17\frac{1}{2}$

The thinnest portions were from the great end, the others from different other parts of the stomach, but the thickest were taken near the pylorus, particularly the heaviest portion ($17\frac{1}{2}$). The mucous coat had been dissected from this portion before it was taken out, so that the united weight was not known; but it could not be less than twenty-four grains.—It is obvious that there are various sources of error in ascertaining, very correctly, the weight of such soft and yielding parts which are to be separated in equal portions. That there is a considerable difference in the quantity and proportion of each coat, in different parts of the same stomach, seems to be all that it is of any consequence to know.

I should imagine that it is but seldom there is so much disparity between the thickness of different portions of the same stomach. The great end is not unfrequently extremely thin.

and in different parts of the same stomach, but in relative proportion in such different parts.

Mr. HUNTER, in his valuable paper on digestion after death, makes some observations relative to the great end of the stomach, to which, as being intimately connected with the subject of this paper, it is necessary that I should advert.

"There are few dead bodies," he remarks, "in which the stomach, at its great end, is not in some degree digested; and one who is acquainted with dissections, will easily trace these gradations. To be sensible of this effect, nothing more is necessary than to compare the inner surface of the great end of the stomach, with any other part of its inner surface; the sound portions will appear soft, spongy, and granulated, and without distinct blood vessels, opaque and thick; while the others will appear smooth, thin, and more transparent; and the vessels will be seen, ramifying in its substance; and upon squeezing the blood which they contain, from the larger branches to the smaller, it will be found to pass out at the digested ends of the vessels, and to appear like drops on the inner surface."* These effects, he attributes to digestion, by the gastric juice, in the ducts of the glands which secrete it.

With every respect for the high authority of a gentleman to whom the professional world is so much indebted, I shall state to the society, the circumstances in which my own observations have not agreed with those of Mr. HUNTER, as to some of the points mentioned in the quotation just given.

The great end of the stomach certainly appears, in general, to be smoother, thinner, and more transparent than the other parts; but its thinness does not apply to the *villous* coat alone; there is also, (as I have already shewn) a very great thinness of the *muscular* coat, at this place, which may equal, and sometimes exceed that of the former.

The instances which I have mentioned above, afford striking examples of thinness in the coats of the stomach at its

* HUNTER'S Observations on certain Parts of the Animal Economy, p. 226.

great end; but that this thinness originated in erosion of the villous coat by the gastric juice, appears to me to be very doubtful; because it is difficult to conceive, how this effect could occur, without being accompanied by an erosion of the ends of the arteries, and consequent extravasation on attempting to inject them: but yet, in the cases which I have stated, where the substance of the stomach was in the extreme of thinness, no extravasation took place when the arteries were injected. In those cases likewise, the venous blood, on forcing it backwards, filled minute vessels, but was not extravasated.

I can hardly indeed conceive, that if the great end of the stomach were, in ordinary circumstances, eroded by the powers of the gastric juice, we should be able, with any degree of certainty (as we assuredly are), to fill its vessels by injection; unless we could suppose, that the vessels were left unaffected in the solvent operation. Mr. HUNTER was quite aware that the gastric juice, in diminishing the thickness of the villous coat, must digest the ends of vessels; for he gives as a proof of digestion of the stomach taking place, that blood, when forced from larger branches into smaller ones, passed out at the digested ends of vessels, and appeared like drops on the inner surface. Such a degree of digestion, however, must, I venture to suggest, be very rare; for in the many trials which I have made as to this point, particularly where the stomach was exceedingly thin, it has never happened to me to be able to do more, than fill the minute extremities of the veins, (in the way which I have already mentioned) by pressing the blood backwards in the larger branches. These minute extremities are easily ruptured, in injecting the veins; and if a sufficient body of blood could be forced back from the trunks into them, (which can scarcely be the case) it is most likely that the same effect would follow.

Mr. HUNTER seems to refer the vascular appearance, seen in the inner surface of the stomach, to thinness of the villous coat; meaning, I presume, to imply, that the vessels are generally in a state to be visible, provided a certain portion of the

villous surface by which they are covered, or in which they are imbedded, were removed from them. This, however, does not appear to me to be the case; for the visibility of vessels, as far as I am able to judge, arises, in a considerable degree, from the accidental circumstance of blood being contained in them, without which, they would be difficultly seen at all*; and the possession of blood, seems to me to be in a great degree independent of the state of the coats as to thickness.

It by no means follows, because large veins are frequently seen ramifying under the villous coat of the great end of the stomach, (when this is thin, and therefore admits them to be seen through it) that a similar vascular appearance will be seen in other parts of that viscus, by dissecting off the whole, or a part only of the mucous coat which lines it.

The nature of that vascularity which is so generally seen in the villous coat of the stomach, seems to have been very much misunderstood among authors, even of high eminence.

HOFFMAN has a chapter entitled, "*de inflammatione ventriculi frequentissima*," in which he expresses his surprise, that a complaint so common, as he found inflammation of the stomach to be, should have been so little observed; and he points out as indications of this disease, appearances very similar to such as are mentioned in this paper, to be of usual occurrence.† He admits the existence of similar appearances,

* The term vessels, employed by Mr. HUNTER, can only apply to veins, the arteries being always empty, except perhaps in a portion of their trunks. If blood is not contained in the veins of the stomach, even the trunks of those veins are discovered with very great difficulty. The arteries may generally be traced by their size, while they run between the peritoneal and muscular coats, which is the first part of their course in the stomach; but in the small branches, they are seldom, in their usual state, to be seen or felt.

† "In corporibus dissectis, ventriculus valde rubicundus, variis modo rubris, modo nigris maculis distinctus, vasaque sanguinea et capillaria multo sanguine turgida reperiuntur; quandoque orificium sinistrum macula lata nigra notatum visitur."—"Non totus vero ventriculus semper, sed pars saltem, maximè vero fundus, inflammatur." HOFFMANNI Opera, tom. 6. p. 224.

in plague and various fevers; but in the former, he attributes their occurrence to a species of poisonous miasma, inhaled by the breath, which produces spasm, and by this means, inflammation of the stomach.

DE HAEN* and STOLL† give examples of what they regard to be inflammation of the stomach, terminating in gangrene, without having exhibited any of the usual symptoms of gastritis; and the former recommends this occurrence, as a very remarkable and puzzling one, to be added to his chapter of *Problemata et Difficultates*.

SELLE, in his *Pyretologia*‡, refers to DE HAEN, as affording a modification of the usual definitions of gastritis; and CULLEN seems also to have depended on the authority of the same author, when he states, "that it appears from dissections, that the stomach has often been affected with inflammation, when neither pain nor pyrexia had before given any notice of it."§

PORTAL, in speaking of the great vascularity of the stomach, says, that by means of the slightest turgescence of the vessels of the stomach, particularly the veins, the villous coat becomes dark; an effect so common, that this black colour ought to be regarded as *a mark of inflammation*, rather than poison.||

* "Nec minus mirabilis ventriculi, et obstructi, et perquam inflammati, et gangrænosi, contemplatio, ubi ad mortem ferè usque, nec signa febris, aut gangrænz in pulsu, nec signa doloris in hoc viscere, nec signa alicujus in ejusdem functione defectus, apparuerint." DE HAEN's *Ratio Medendi*, pars 6, cap. 12, § 2.

† — "ventriculus ingens" ——— "cujus posterior facies longè latèque ex inflammatione" ——— "rubebat" ——— "En hic quoque ventriculum inflammatum, absque consuetis et manifestioribus inflammationis signis. Intestina livida, vel absque prægressa inflammatione fuerunt, vel prægressa est inflammatio absque ejusdem signis." STOLL's *Ratio Medendi*, tom. 3. p. 380.

‡ SELLE's *Rudimenta Pyretologiæ Methodicæ*, p. 139.

§ CULLEN's *First Lines of the Practice of Physic*, vol. i. p. 420.

|| PORTAL's *Cours d'Anatomie Medicale*, tom. 5. p. 164. He adds, "Dans quelques cadavres, on ne trouve ce viscere inflammé, que dans quelques points, comme vers le cardia, vers le pylore, souvent dans la grande courbure de

FRANK states frequency of inflammation of the stomach, and enumerates its symptoms: but he admits, that in many instances, where inflammation was found in the stomach after death, most of those symptoms were absent; in others, where the greater part of the symptoms were present, that no mark of inflammation was to be discovered on dissection; and in others, that a similar train of symptoms was removed, by means which were adverse to inflammatory complaints.*—I am likewise inclined to think, that vascularity of, and extravasation into, the villous coat of the stomach, as well as external vascularity of the intestines, particularly when these appearances are dark-coloured, have been occasionally described as inflammation or gangrene, even by MORGAGNI and LIEUTAUD, two of the highest authorities in pathology.†

ce viscere, ou ailleurs; d'autrefois les parois de l'estomac sont inflammées dans toute leur étendue." Tom. 5. p. 194.

* "Non infrequens stomachi humani morbus est *gastritis*, aut ejusdem inflammatio; cujus quidem signa principalia in febre acuta, in epigastrii tensione, ardore, dolore, in vomitione, anxietate, singultu, ab assumptis quibusvis mox, et cum subitanea istorum rejectione, adauctis consistunt: sed in multis, qui ventriculi post mortem phlogosin obtulere, nunc plurima ex istis defuerunt; nunc, cum pars major symptomatum in egrotante comparuisset, vel in cadavere inflammationis ad ventriculum in vanum querebantur vestigia; vel ab aliis causis dictorum effectuum pependerat cohors, ac a medendi methodo, inflammationis certe contraria, potuit dissipari."—FRANK (J. P.) *De curandis hominum morbis epitome*, lib. 2. p. 253.

† "Ventriculi fundus atro colore;" "ventriculus intus inflammatus, minimisque vasculis multum sanguine turgentibus;" "ex atro (ilii partes) rubebant, sanguiferis vasis, non secus ac post injectam coloratam ceram, manifestissimis," are examples of the mode of description frequent in Morgagni's valuable work.—In one instance, (epist. 29. art. 29.) the absence of pain in inflammation of the bowels, is attributed to a paralytic affection, which took off the sensibility of the parts; and from other cases MORGAGNI deduces the inference, that pain and fever are not necessary for the existence of inflammation of the intestines. His words are, (epist. 35. art. 21.) "Nec tamen, siquando alterum vel utrumque horum" (nempe vehementem dolorem, vel acutam febrem) "aut abesse, aut vix esse invenies, continuò putabis, aut nullam esse inflammationem, aut levem, aut gangrænam et sphacelum in eorum esse intestinis non posse, in quibus duo illa præcessisse non videris."

HALLER also seems to regard fulness of vessels as a proof of inflammation; for he states, that he has so often, in his dissections, seen inflammation of the intestines present, as to consider such an affection as almost constant in every kind of fever, and frequent in every other complaint.* Numerous examples of the same opinion are to be found in other respectable authors.

The importance of distinguishing between darkness of colour, and proper inflammation, or its effects, was noticed at a very early period by HABICOT, a French surgeon of eminence in his time, who states, that persons are often deceived into a belief, that the dark colour produced by the gastro epiploic vein, in the greater curvature of the stomach, is the effect of poison.†

* HALLER's *Elementa Physiologicæ*, tom. 7. p. 43.

Most of the cases of inflamed stomach noticed by LIEUTAUD are taken from other authors. One of them (*Historia Anatomica Medica*, tom. i. p. 26. obs. 68.) is abridged from HALLER's *Opera Minora*, tom. 3. p. 295, and seems to me to shew how loosely inflammation of the stomach has been put down among diseased appearances. It is the case of a person, in whom, though there had been no affection of the stomach during life, that organ was found, on examination, to be universally inflamed, and blood effused into some parts of its cellular substance. The patient was a man of 50, who had recovered from an attack of pleurisy, but remained very liable to pectoral complaints. From exposure to cold, he was seized with a violent fever, with pain and oppression in the chest, which were followed by hiccup, delirium on the 8th day, and death on the 12th.—See some judicious observations on the differences between inflammation and vascular fulness in membranes, in HUNTER on the Blood, p. 281.

† “La partie interieure d'iceluy vètricule estât nettoyée démontrerez, tant la tunique interne qui est veloutée, et comme l'aboutissement qui se faict des vaisseaux provenàs de la vene gastre epiploïque en la partie gibbe dudict ventricule, le rend de couleur noirastre, qui a faict croire à beaucoup d'inexpers, en la medecine et chirurgie, aux maladies violentes y avoir eu poison ou venosité en leur mort.”—HABICOT NICOLAS, *Semaine ou Pratique Anatomique*, p. 48, leçon 3, Paris, 1610.

BOYER makes nearly a similar remark: “Le grand nombre de vaisseaux qui se distribuent dans cette tunique (la veloutée) lui, donne souvent une couleur pourpré obscur; c'est a quoi il faut faire la plus grande attention

The means of forming a satisfactory conclusion in cases of suspected poison, obviously connect themselves with the proofs, which dissection is capable of affording, of the existence of inflammation in the stomach during life. There are no circumstances under which medical men have a more serious and anxious responsibility, than in the examinations which they are called upon to make in such description of cases; for while, on the one hand, public justice demands from them an unequivocal avowal of the results of their judgment and experience, for the conviction of guilt; it is equally required, that their opinions should be founded on an accurate knowledge of what are the effects of natural causes on the human body, and what the consequences of deleterious operation. The most able and experienced men have found difficulties in making up their minds as to the necessary effects of poisons; and it would be highly important, both for the interests of the public, and the credit of the profession, that the means should be afforded of directing the judgment, in those delicate and difficult problems, on which medical testimony is occasionally required in courts of justice.*

Authors on Forensic medicine have been too apt to generalize, without having had the benefit of studying, sufficiently, individual cases; and hence the effects of putrefaction, and the spontaneous changes which the loss of vitality produces on the human body, have, in descriptions, it is to be feared, been sometimes misunderstood, and sometimes confounded with the proper and necessary operation of poisons.

lorsqu'on est chargé de faire l'examen des corps de personnes que l'on soupçonne mortes de poison."—*Traité complet d'anatomie*, tom. 4, p. 337.

* I allude more particularly to the hesitation which Mr. HUNTER had, in the celebrated trial of CAPT. DONNELLAN, in distinguishing between the effects of poison and the effects of putrefaction.

A report of this important trial was published by Mr. Gurney, at length, from the account taken by him in short hand. A full abstract is to be found in the *Gentleman's Magazine* for 1781, and in the *London Chronicle* for March of that year.

Some of the most respectable writers on this subject, have represented the effects produced by poisons on the stomach, œsophagus and intestines, to consist in diminished cohesion, inflammation, mortification, erosion, and perforation of those organs:* but later and more particular observation seems to evince, that the only morbid change which may be invariably expected, is inflammation; for the others are either occasional only in their occurrence, or equivocal in their nature; as in the case of mortification, or gangrene, which may be assumed to exist, from mere darkness of colour. Mortification and gangrene, are rare occurrences in either the stomach or the bowels; and they are not noticed by Dr. Baillie, in his *Morbid Anatomy*, as belonging to the usual effects of mineral poisons, nor by Mr. Brodie,† nor Dr. Jaegar,‡ both of whom have attended very much to the operation of those substances.

I may add, that in a case of poison by arsenic, which I saw some years ago, there was no diminution of natural tenacity, which is the only certain test of a part being mortified; and no

* Mais ce qu'il y a de constant dans les cadavres des personnes qui ont péri d'un poison âcre ou caustique, c'est de trouver l'œsophage, l'estomac et les intestins grêles atténués, enflammés, gangrenés, rongés et souvent percés.

MAHON'S *Medicine Legale*, tom. ii. p. 308.

PLENCK, in his *Toxicologia*, page 13, says that we may distinguish when a person has been destroyed by poison, "si in tali cadavere ventriculus inflatus vel spasmodicè contractus, aut inflammatus, vel gangrenosus, vel saltem, maculatus inveniatur, absque alia prægressi prius morbi causa."

DR. PARR states, that when "stimulant poisons have been the cause of death, the abdomen is greatly inflated, becomes rapidly putrid, dark spots appear on the body, erosion, inflammation and gangrene are found in the fauces and stomach, the blood is black, and collected in the veins; above all, the villous coat of the stomach is destroyed."

Medical Dictionary, art. *Medicina Forensis et Politica*.

† Further experiments and observations on the action of poisons on the animal system.

Philosophical Transactions for 1812, part ii. p. 210.

‡ *Dissertatio Inauguralis de effectibus arsenici in varios organismos, necnon de indicibus quibusdam veneficii ab arsenico illati.*

Edinburgh Medical and Surgical Journal, Jan. 1811, vol. vii.

circumstance from which gangrene could be inferred, but the very insufficient one of darkness of colour.*

Neither is the disposition to putrefy, in such cases, materially different, (as is generally imagined) from what it is in ordinary circumstances: and that erosions very rarely happen, and are sometimes liable to be suspected, when they do not exist, is rendered probable, by the consideration of the facts brought forward by the two last named gentlemen.

But if it be admitted, that the only constant and necessary primary effect of mineral poisons on the human stomach, is the production of inflammation, it is important to inquire, whether such appearances of inflammation are so distinctly and unequivocally marked, as to be readily distinguishable from mere vascular fulness, or slight extravasation, as described in this paper?

To this question, I fear, that an answer, which is completely satisfactory, cannot at present be given.

Dr. BAILLIE states, that in inflammation of the stomach, that organ is "a little thicker at the inflamed part, the inner membrane is very red, from the number of small florid vessels, and there are frequent spots of extravasated blood, which appearances are more intense, when arsenic has been swallowed." With this account, Mr. BRODIE's observations, in considerable measure agree.

In a dog which had taken several grains of corrosive sublimate, and which was destroyed a few hours afterwards, for the purpose of observing what might be regarded as appearances of recent inflammation in its stomach, the following were the principal circumstances remarked.†

* Case published in the Edinburgh Medical and Surgical Journal for October, 1809. It is remarkable, that in this case, there was reason to suppose, that the patient had suffered little or no pain,—and in the only example which Dr. JAEGER saw of death by arsenic, in the human subject, there was no complaint of pain, even when the patient was asked about it.

† This dog I examined with Mr. Lawrence, Assistant Surgeon to St. Bartholomew's Hospital. The dog had vomited considerably. He was di-

That part of the stomach which extended from the cardia, about an inch and a half along the lesser curvature, and about three parts of an inch in every other direction, together with a few other portions of a very small extent, possessed a pretty deep crimson hue; while the pyloric portion was of a light straw colour, and the other parts of a greyish pink. The crimson colour, though deeper, had, in other respects, very much the character of what was mentioned in the note to page 16; but it was mixed with darker coloured patches, which seemed, on inspection, to consist of coagulated effusion, or coloured coagulum, in the substance of the villous coat, very similar to that which is sometimes found in an inflamed serous membrane, on which coagulable lymph had been very recently deposited. The plicæ were numerous and firm; there was little external vascularity; and below the villous coat, there were some minute veins perceptible, (particularly where the coat was reddest) which could not however be traced into its substance.

Immersion in water removed part of the general redness; but that of the dark patches remained, with little change, till putrefaction commenced.

The villous coat of the intestines had occasional patches of light crimson efflorescence.

It is highly important that appearances of inflammation in the stomach should be correctly distinguishable, after death, from those of mere vascular turgescence; but it does not appear to me, that the discrimination can at present be made with sufficient precision.—The following observations, I take the liberty to offer, as suggestions relative to this subject.

When the stomach is inflamed, coagulable lymph is occasionally thrown out in the substance of the villous coat, or upon its surface; and this, when it occurs, (which I believe to be

rected to be destroyed by a blow on the head, instead of by suspension, which would have affected the appearances, by producing unusual accumulation in the veins.

but rarely the case) is perhaps one of the least equivocal indications of previous inflammatory action. But thick mucus sometimes assumes a good deal the appearance of coagulable lymph; and the existence of a coloured coagulum, may occasionally be confounded with a coagulated portion of extravasated blood, adhering (as in the case of Nicholson) to the villous coat; which may the more readily occur, when the former is not in quantity, sufficiently great, to produce well marked thickening. It is also to be observed, that in cases where mineral poisons have been given, the deleterious operation (as appears from the experiments of Mr. Brodie) is generally upon the brain and nervous system; and in this case the inflammation, produced on the stomach itself may be short of that which would produce effusion of lymph.

It is exceedingly likely, that in inflammation of the stomach, the redness is less distinctly referable to vessels, and the florid colour more permanent, than in mere turgescence: but it is not to be forgotten, that it sometimes happens in cases of natural death, that the vascularity of that organ is partly florid and distinct, and partly diffused; circumstances which may create a little embarrassment, when they are to be considered with reference to a certain supposed cause.

In every case of death from poison, the appearances which dissection may offer, must be modified by the state of the blood-vessels after death, and by the very vascular nature of the stomach, and the disposition to accumulation in its veins, which occur at the close of life. We may therefore not unreasonably expect such venous accumulation to be often superadded to the proper and necessary effects of inflammation.

If well marked erosions were the frequent effects of severe inflammations, they would materially assist in forming a ground of discrimination. As Mr. Brodie and Dr. Jaegar, however, represent erosions to be very uncommon effects of arsenic, it is important, that the frequent thinness of the fundus of the stomach, and the occasional inequalities of the villous coat, either there, or in other parts of that viscus, should not be

mistaken for them. These inequalities are by no means unfrequent, and I have often seen them to a considerable degree, where they were unquestionably mere peculiarities of structure.

In judging of the existence of external inflammation in the living body, it is not by mere redness, or by turgescence of vessels, that the opinion is guided; but by those circumstances, in conjunction principally with pain, heat and swelling. It does not therefore appear to be less necessary, for the purpose of enabling us to judge of the existence of internal inflammation, that something unequivocal in the symptoms should be super-added to the appearances submitted to our consideration, than that there should be assistance required in judging of external affections, in addition to mere colour or vascularity.

But on the subject of symptoms, it is important to recollect, not only that genuine gastritis is extremely rare, but that affections of some neighbouring parts, which may sympathize much with the stomach, may be confounded with original affections of the stomach itself. This organ, too, is liable to many very painful or uncomfortable sensations, which there is no reason to consider as marking it with any particular character of disease.

In offering these remarks, I may, perhaps be regarded as having somewhat aggravated the difficulty of forming a judgment, after death, as to the existence of inflammation of the stomach during life. It does not appear to me, however, that I have done so; and I should be happy, if, by calling the attention of professional men to the subject, a more correct, and more practical diagnosis should be established, than is at present possessed, relative to the operation of inflammation in that organ, from whatever cause it may have proceeded.

Before I conclude this paper, it is necessary that I should advert to the appearances of inflammation, which are gene-

rally stated to be found in the stomachs of hydrophobic patients, and which have been, by many, thought to prove that hydrophobia is a species of gastritis.

I have seen five cases of hydrophobia, and have been present at the dissection of three of them; but I am unable to say, that there was any palpable difference, between the vascular appearance of the villous coat of the stomach in those cases, and that which is ordinarily seen, in the human subject, where there was no affection of the stomach during life.

In some of the cases which are upon record, the stomach is stated to have been entirely free from disease;* and most of the other examples to be found in authors, particularly those which are published in the *Memoirs of the Royal Society of Medicine of Paris for 1783*, and by Dr. Hunter, in the 1st volume of the *Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge*, afford no appearances in that viscus, which are not referable to fulness of vessels only.

The appearances observed in the stomach of the dog, are rather more diversified. The principal number of cases reported, exhibit marks of redness and fulness, or slight extravasations of various extent, in the villous coat; but there are some mentioned, where this coat presented nothing morbid in its aspect.†

When we compare the descriptions given of the state of the stomach, in most of the cases of hydrophobia recorded as occurring in the human subject (for I do not take into account any extraordinary, or anomalous cases) with the series of dissections presented in this paper, the resemblances are striking, and certainly tend to throw some degree of doubt on the idea very commonly entertained, that the usual vascular appearance

* See VAUGHAN'S *Cases and Observations on Hydrophobia*, Cases 1st and 3d.—Also two cases by Dr. BABINGTON, the first in *Medical Communications*, vol. I. p. 215; the second in *Medical Records and Researches*, p. 117; and several cases quoted in Hamilton's *Work on Hydrophobia*.

† GILMAN'S *Dissertation on the Bite of a Rabid Animal*, sect. I. &c. &c.

observed in hydrophobic stomachs, is inflammation; and that it is connected with the production of the symptoms which existed during life. It is very difficult to conceive, that the cause of one of the most formidable and distressing maladies of the human body, can be such an affection of a part, as is, in many cases, so slight, as not to be an object of attention or remark at all; and in most, does not exceed what is very generally met with, where no symptoms, referable to disease of the stomach, or spasmodic affection of the œsophagus or pharynx, were present.

The appearances mentioned in some of the dissections given of dogs, deviate more from the character of simple turgescence, than most of those stated to have been observed in the human subject; inasmuch as there was frequently effusion of blood seen between the villous and muscular coat of the stomach, or in the substance of the former. The mere action of vomiting will, however, as I have in one case particularly observed, materially increase the redness to be seen, after death, in the stomach of a healthy dog. In attempting, therefore, to establish the pathology of this disease, it is important to discriminate between the effects of inflammation, and the influence which the violent spasmodic affection of the œsophagus and pharynx will have, not only upon the mucous membrane covering those parts, but upon the villous coat of the stomach itself, by being propagated downwards within the cardiac orifice. For it is very probable, that violent spasmodic action of muscles, may produce a well marked influence on a superincumbent mucous coat, particularly when such coat is extremely lax and vascular, as is that of the stomach.

With regard to the employment of blood-letting in hydrophobia, I would observe, that if its utility were even confirmed by the most irrefragable evidence, it would not be conclusive as to the inflammatory nature of this disease. The effects of this remedy are not to be limited to the mere removal of inflammation, or inflammatory disposition. It is not employed with this view in apoplexy, where it is often of the most de-

cided benefit; and there may be effects produced in the body, particularly on the nervous system, by the copious abstraction of blood, for which the present state of pathological knowledge is not qualified to account.

On the Muscularity of the Uterus.

By CHARLES BELL, Esq. F.R.S. Ed.; and Teacher of Anatomy in Great Windmill Street.

[From the London Medico-Chirurgical Transactions for 1813.]

As midwifery makes no part of my occupations, I intend, in this paper, to confine my attention to the anatomical structure of the womb; or to such points of the pathology as are directly connected with the anatomy. But some facts have been forced upon my observation which have not hitherto been laid distinctly before the public. They have induced me to resume the examination of the muscular structure of the womb; and comparing what I have seen in the dead body, with what I have observed in the living, I shall endeavour to lay a connected account of this subject before the Society.

I have dissected the gravid uterus in all conditions—in women who, in consequence of fever, had died undelivered; in women who had died from flooding; and in women who had died in consequence of distortion of the bones: I have had two opportunities of examining the uterus ruptured by its spontaneous action; and one, in which the uterus had been ruptured by violence; and, finally, I have examined the state of the uterus after death in consequence of the Cæsarian section.*

* I wish that my present subject permitted me also to state what I have found on dissecting the parts after the use of the crotchet, and in particular where the forceps had been used, as I must presume, in a case improper for them. The injury which the seeming harmless instrument, the forceps, is capable of doing might then be proved, and a wholesome admonition given to the young surgeons.

In this way I have been led to attend to this subject as an anatomist, rather than as an accoucheur; an explanation which, I fear, will seem very necessary in apology for these observations.

Of the Muscular Structure of the Uterus.

The muscularity of the uterus is proved by direct ocular demonstration of the fibres in dissection; by the thickness of the fibres corresponding with their degree of contraction; by the visible action in the human uterus during life; by the resemblance of the laws of its contraction (as felt and as perceived in its consequences) to those which govern the contraction of the other hollow viscera; and lastly, by the vermicular and intestinal motions of the uterus, as seen in experiments upon brutes.

The prevailing notion that the muscular fibres of the uterus are very confused and scarcely perceptible, has prevented authors from founding the rules of practice on the sure ground of anatomy. And if it be possible to place this matter in a clear light, it may banish, perhaps, a certain vagueness which is much to be regretted in so important a department of practice. The most curious, and obviously useful part of the muscular substance of the uterus, has been overlooked; I mean the outermost layer of fibres which covers the upper segment of the gravid uterus. The fibres arise from the round ligaments: and, regularly diverging, spread over the fundus, until they unite and form the outermost stratum of the muscular substance of the uterus. The round ligaments of the womb have been considered as useful in directing the ascent of the uterus during gestation; so as to throw it before the floating viscera of the abdomen: but, in truth, the uterus could not ascend differently; and on looking to the connection of this cord with the fibres of the uterus, we may be led to consider it as performing rather the office of a tendon, than that of a ligament. It is familiarly known, that the subsiding of the belly in pregnancy, occasioned by part of the womb sinking within

the brim of the pelvis, is the least equivocal sign of the approach of labour, and of the pelvis being of due dimensions: and in some measure this is also an assurance of the right presentation of the child. This layer of muscular substance operating on the round ligaments, is well calculated to assist in expelling the fœtus; but also in a particular manner it is provided for bringing down the womb in the first stage of labour, and it is well calculated to give the uterus and the head of the child the right position with regard to the axis of the pelvis. From the connection of the lower extremities of the ligaments with the tendinous insertions of the abdominal muscles, we can conceive that this muscle and these ligaments may shift the position of the womb, and carry it off from the support of the ilium; but otherwise we should be at a loss to conceive how the uterus, by its own action, could adjust the position of the orifice for the delivery of the child.

On the outer surface and lateral part of the womb, the muscular fibres run with an appearance of irregularity among the larger blood-vessels; but they are well calculated to constrict the vessels whenever they shall be excited to contraction.—The substance of the gravid uterus is powerfully and distinctly muscular, but the course of the fibres is here less easily described than might be imagined. This is owing to the intricate interweaving of the fibres with each other; an intertexture, however, which greatly increases the extent of their power, in diminishing the cavity of the uterus. After making sections of the substance of the womb in different directions, I have no hesitation in saying, that towards the fundus the circular fibres prevail; that towards the orifice the longitudinal fibres are most apparent; and that on the whole, the most general course of the fibres is from the fundus towards the orifice. This prevalence of longitudinal fibres is undoubtedly a provision for diminishing the length of the uterus; or for drawing the fundus towards the orifice. At the same time these longitudinal fibres must dilate the orifice, and draw the lower part of the womb over the head of the child.

In making sections of the uterus while it retained its natural muscular contraction, I have been much struck in observing how entirely the blood-vessels were closed and invisible; and how open and distinct the mouths of the cut blood-vessels became, when the same portions of the substance of the uterus were distended and relaxed. This fact, of the natural contraction of the substance of the uterus closing the smallest pore of the vessels, so that no vessels are to be seen, where we nevertheless know that they are large and numerous, demonstrates, that a very principal effect of the muscular action of the womb is the constricting of the numerous vessels which supply the placenta, and which must be ruptured when the placenta is separated from the womb.

I have observed further, that although in producing contraction and thickening of a portion of the uterus, by boiling it, or by other artificial means, the fibres are made very evident, and the blood-vessels greatly constricted; yet they are not so effectually closed as in the natural contraction of the muscular fibres of the uterus. Thus we are led to contemplate the uterus as more peculiarly destined for the safe delivery of the secundines, than for the reception and growth of the ovum. Although its system of vessels be admirably adapted for an increase of action, and for rapid growth, yet it is not so peculiar in this respect as in its muscular structure; for we find, that where the fœtus lodges in the ovarium, it grows, within the term of uterogestation, to the full size: but if the ovum separates from the ovarium, or from the Fallopian tube, in the example of extra uterine fœtus, the woman dies of hæmorrhage, the blood flowing without being restrained by any system of muscular fibres capable of constricting the blood-vessels which are necessarily ruptured.*

The celebrated Ruysch discovered a circular muscle on the

* See a case by Dr. Clarke. Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge. Mr. Taunton shewed me the parts, where a rupture of the Fallopian tube, in a case similar to this of Dr. Clarke, had occasioned a fatal hæmorrhage into the cavity of the abdomen.

inner surface of the fundus of the uterus.* The use of this muscle, as he conceived it, is to draw the surface of the uterus, by a gliding motion, from the corresponding surface of the placenta; and thus to separate it and cast it off. By some the existence of this muscle of Ruysch is not admitted; and it has been supposed that he was deceived by the appearance of tortuous vessels.† I have nearly an absolute reliance on the observations of Ruysch; and as I have made a section of the uterus, most exactly corresponding with the engraving in Ruysch's work, I must conclude that he was not deceived in what he saw.

In the papers of Dr. Hunter, published by Dr. Baillie, there is the first accurate observation of the concentric fibres which surround the openings of the Fallopian tubes; the description corresponding with the circular strata of fibres which Weitebrecht has seen encircling the mouths of these tubes.

Upon inverting the uterus, and brushing off the decidua, the muscular structure is very distinctly seen. The inner surface of the fundus consists of two sets of fibres, running in concentric circles round the orifices of the Fallopian tubes. These circles at their circumference unite and mingle, making an intricate tissue. Ruysch, I am inclined to believe, saw the circular fibres of one side only, and not adverting to the circumstance of the Fallopian tube opening in the center of these fibres, which would have proved their lateral position, he described the muscle as seated in the center of the fundus uteri. This structure of the inner surface of the fundus of the uterus is still adapted to the explanation of Ruysch, which was, that they produced contraction and corrugation of the surface of the uterus, which the placenta not partaking of, the cohesion of the surface was necessarily broken.

Further, I have observed a set of fibres on the inner surface

* Ruysch, Dec. 2, p. 34.

† By Boerhaave and Albinus. See in the *Opuscula* of Sandifort the words of professor Germ. Azzoguidus, who has also this idea.

of the uterus which are not described. They commence at the center of the last described muscle, and having a course at first in some degree vortiginous, they descend in a broad irregular band towards the orifice of the uterus. These fibres, co-operating with the external muscle of the uterus, and with the general mass of fibres in the substance of it, must tend to draw down the fundus in the expulsion of the fœtus, and to draw the orifice and lower segment of the uterus over the child's head.

I have not succeeded in discovering circular fibres in the os tinæ, corresponding in place and office with the sphincter of other hollow viscera, and I am therefore inclined to believe that, in the relaxation and opening of the orifice of the uterus, the change does not result from a relaxation of muscular fibres surrounding the orifice. Indeed it is not reasonable to conceive that the contents of the uterus are to be retained during the nine months of gestation by the action of a sphincter muscle. The loosening of the orifice, and that softening and relaxation which precedes labour, is quite unlike the yielding of a muscular ring.

Natural Action of the Uterus.

While the uterus retains its whole contents, the action of its fibres is slow and feeble. Its first movement is to shift its position to direct the orifice aright, and to sink down until the lower segment of the womb rests upon the brim of the pelvis: this it does by the operation of the muscular fibres on the round ligaments, and during this shifting of its position are experienced the true dolores præsentantes. When the waters are discharged, the contractions are more powerful, the child's head presses on the orifice, and the fundus and body of the uterus are more powerfully excited. Now the upper and middle parts of the uterus contract; but it is evident that the lower part of the uterus must, during this contraction of the upper

part, relax and stretch, to permit the child's head to pass.— While the child is contained in the uterus, the muscular fibres cannot greatly contract nor impede the blood in the circulating vessels of its substance. But when the child is expelled, then the contraction of the fibres is considerable, and then they take that arrangement which is inconsistent with a free circulation of the blood; the vessels are constricted. By the time that the placenta is expelled by the contraction of the uterus, the vessels of the uterus are closed, and no active hæmorrhage follows.

Action of the Uterus producing Rupture.

I have examined two cases of uterus ruptured by its spontaneous action, and one in which the violent attempts at delivering the child, ruptured it. In the two first examples the circumstances of the labour, and the appearances on dissection, had a close resemblance. The labour was going on apparently well, when, after a violent pain, the woman vomited a dark matter; on examination the child's head had receded; on putting the hand on the belly of the woman, the form of the child could be distinctly felt. Such was the description I heard when I came to open the body in the first case. I found the fœtus, cord, and placenta lying among the viscera, and the uterus contracted and drawn into the pelvis. The head of the child I found unusually enlarged by hydrocephalus. In the second case, the uterus only was brought to me. In both, the uteri were largely rent transversely, just within the orifice on the fore part; and the margins of the rents were thin and ragged. In the first, the orifice of the uterus was dilated and obliterated: in the second, the lips of the orifice were still distinguishable, being imperfectly dilated and rigid.

In the third case of rupture of the uterus, which I dissected, the circumstances were very different: I went to see a woman, who, being remarkably distorted, I thought could not

survive her labour. I found a gentleman engaged in assisting her; he had proceeded, I believe with perfect propriety, to deliver the woman with the crotchet; he had evacuated the cranium and brought away the frontal and parietal bones; he had got the hook into the foramen magnum, and was endeavouring to bring down the base of the cranium laterally, to accommodate it to the flattened pelvis. In this however he could not succeed. On returning next day I found the patient dead: the body was afterwards conveyed to me. On opening the abdomen I found the uterus still containing the body of the child, and the placenta, but an arm and shoulder projected through a rent on the left side and lowest part of the uterus: it was covered with slime and mucus, and the lips or margin of the rent were quite black and sloughy. It required my whole strength, standing on the table, to draw back the remains of the child's head, which were wedged in the distorted pelvis.

In the first instance, I think the cause of rupture was, that the dilatation of the orifice of the womb was insufficient to admit the preternaturally large head to pass. In the second, the rupture was owing to the rigidity and insufficient dilatation of the orifice of the uterus, while the muscular action of its body was powerful. We know very well, that a muscle during action acquires an additional power of cohesion, and consequently additional strength, but that when relaxed it is comparatively weak. This explains why the rupture takes place at the lower part of the uterus; for there we find, that during the most powerful contractions of the womb, there must be relaxation and dilatation to admit the child's head to pass, and that relaxation is weakness.* In the third case, the remote cause of

* I shall not presume to deny, that the vagina and not the uterus has been sometimes ruptured: yet from the general resemblance in the circumstances of the cases of ruptured uterus, and the appearance of the torn parts, I think the rupture takes place in the uterus, near the orifice. If the orifice of the uterus be relaxed and open, the vagina will not remain rigid, the child's head will descend: if there be no resistance to the contraction of the uterus, the violence of the action cannot be such as to tear the parts. The child and placenta being found in the cavity of the belly, de-

the rupture was the obstruction to the labour, from the wedging of the child's head; the child being forced by the action of the womb into the pelvis, and by the pulling of the accoucheur in the operation of the crotchet, the uterus was bruised against the linea innominata: hence the appearance, peculiar to this case, of blackness and gangrenous sloughs on the edge of the rent in the uterus.* In this case also, the immediate cause of the rupture was the contraction of the uterus, in the attempt to force down and deliver the infant, the violence of which action falling upon the weakened part of the uterus, near the orifice, tore it: the head of the child being locked in the pelvis, was undoubtedly the cause why the whole child was not thrown into the cavity of the abdomen.

*Muscular Action of the Uterus considered in the case of Cæsa-
rean Section.*

While in partnership with my brother, Mr. John Bell, an occasion occurred which made the performing of this formidable operation an absolute duty. As the description of what occurred during that operation, and the appearances which were presented on dissection, may not be without interest to some here; and as they have a direct connection with my subject, I shall take the liberty of stating them.

In proceeding to examine this woman as she lay with her back towards me, I was surprised to find a large smooth tumour betwixt the thighs, which I could not readily recognise as the abdominal walls, thus distended and strangely pendulous. In this position of the pregnant uterus, with its fundus hanging down, we discover one consequence of great distur-

clares the rupture to take place before the full descent of the head into the pelvis, that is, before the final dilatation of the orifice of the uterus.

* The linea innominata was in this case very sharp; the skeleton is in my collection.

tion in the pelvis, and an insuperable difficulty in the way of the operation of embryulcia, since the child's head does not present to the opening of the pelvis, and cannot be felt per vaginam.

My assigned station in this operation was to raise the tumour of the belly; to present the lower part of it; to prevent the intestines from protruding; to compress the belly, and to follow the receding sides of the contracting womb, and to excite the womb towards its ultimate contraction; on which latter circumstance we all agreed the woman's safety in the first period after the operation must chiefly depend. Mr. John Bell, with his characteristic neatness, made the incision. The incision through the walls of the abdomen was made a little towards the right side of the linea alba, and in the space betwixt the umbilicus and pubes: it was of length calculated to admit the child's head to pass, stretching the parts.* When the integuments and muscles were cut through, I moved my hands, which were spread upon the belly of the woman, so as to make the walls of the abdomen glide on the smooth surface of the uterus. The very great distension of the integuments, and their consequent thinness, made this necessary, to inform those who looked on that the abdomen was actually cut into; and indeed the surface, which now presented of a pale rosy hue, was not even what an anatomical student might have expected. It was matter of wonder to me, that no small vessels were perceptible on the living surface of the uterus, and no sinuses tinged with blood, considering that those vessels make so great an exhibition in dissection. But it was more a matter of admi-

* The incision was made as low as possible, to avoid cutting the upper part of the uterus, and in the expectation of avoiding the placenta. In the operation by Mr. Thomson, (*Med. Obs. and Enquir.* vol. iv. p. 274) the middle of the incision was opposite to the navel. In Dr. Kellie's very interesting case, the incision was made from two inches and a half above the navel to four inches below it. (*Edinb. Med. Journ.*) The necessity of evacuating the bladder, which lies above the brim of the pelvis, in cases of great distortion, is sufficiently apparent.

ration to me to observe the effect of the first touch of the knife upon the uterus; for instead of the form of a cut remaining for a moment, the fibres were excited to retract what would otherwise have formed the edges of the incision, and instead of a cut being perceptible, there was, in its place, a circular space, with concentric circles of fibres. Another thing remarkable was, that although the integuments and rectus muscle and substance of the womb were cut, yet there was not as yet a drop of blood to flow over the edges of the wound, no large veins were to be seen in the substance of the womb; and in this we thought ourselves particularly fortunate.

But presently it appeared how much we had been deceived; for the substance of the womb being cut through, the lobes of the placenta rolled out. The placenta was unfortunately attached to the fore and lower part of the womb, and now, notwithstanding that no blood jetted from the womb, I was convinced that the incision must be through the larger blood-vessels, and I already despaired of the woman's recovery.

Mr. Renton, Surgeon of Pennycuik (who had, in a manner deserving the highest praise, delivered the woman on former occasions with the crotchet, in very difficult circumstances,) was prepared to break the membranes; to pass his naked arm into the uterus; to seize the child by the feet, and deliver it. This was done rapidly and dextrously by Mr. Renton passing his hand in a conical form below the lower edge of the placenta: the child was delivered safely, and is now alive. After the delivery of the child, the placenta was thrown out by the action of the uterus.*

The instant the operation was performed, the mother was seized with violent vomiting; and now it required all my strength to compress the abdomen, and retain the parts against

* We did not see a portion of the intestines, owing to due pressure sustaining the lips of the wound; it has occurred in performing this operation, that they have come down into the surgeon's hands upon the rapid subsiding of the uterus.

the operation of the diaphragm and abdominal muscles. For twenty minutes I continued pressing the belly, and compressing the uterus betwixt my hands. The wound of the integuments was dressed; stitches were introduced, the intervals strengthened by adhesive straps; compresses were put on the abdomen, and the belly swathed. But that happened which I foresaw would be the consequence of ceasing to compress the uterus: the woman became more faint, and at last insensible; she lived only to the gratification of her wish, to become, at all hazards, the mother of a living child.

Dissection.

It was fully three weeks before I could procure the body for dissection, yet as this was during a severe winter, the demonstration of the cause of death, and of the state of the uterine contraction, was perfect. On opening the belly, I saw the uterus lying contracted; but the wound of it was gaping, the lips everted, and it now appeared as if the uterus had been cut from the fundus to the neck. This singular appearance and deception I attributed to the contraction of the body of the uterus, while the edges of the incision remained paralysed and uncontracted.* The thickness of the womb was increased to four times the diameter it presented during the operation: but what most deserved attention was the appearance of the large vessels, now with open mouths, which during the operation were not apparent. From the mouths of those vessels the streaming blood had been coagulated, and now formed strings, reaching from the mouths of the vessels to the great cakes of coagulated blood which lay on each side of the abdominal ca-

* Precisely the same appearance presented in the case communicated by *Dr. Hunter, Med. Obs. and Eq.* v. 4. Mr. Thomson's incision was six inches in length of the gravid uterus: on dissection the uterus was found contracted to the size of a common melon; and the wound appeared nearly the whole length of its body.

vity. Besides the coagulated blood which lay in the cavity of the abdomen, a large clot was in the cavity of the uterus.*

From this case we see, that when the substance of the uterus is cut, either the muscular fibres do not fully contract, or in their contraction in consequence of being cut across, they do not constrict the blood-vessels. The misfortune in the case was, that the placenta was attached to the lower and fore part of the uterus; and this, with the defect of action in the muscular fibres, was the occasion of the death of the woman by hæmorrhage.

The circumstances of this case suggest very material improvements in the manner of performing the operation. Instead of cutting into the womb, as was done in the preceding case, I would recommend that a very small incision should be made, such only as would enable a finger to be introduced; by boring, aided by the disposition which the uterus has to dilate, another finger might be passed, and then a third, and at length the whole hand, in a conical form, might be forced into the womb. I further venture to suggest, that this should be done as far down upon the lower part of the uterus, as the urinary bladder and the reflection of the peritoneum will permit; for at the lower part the uterus is least vascular, and most disposed to dilate. In the further prosecution of the operation, the child should not be suddenly extracted, but the feet being brought out by the opening, the body should be slowly delivered by the spontaneous action of the womb; and the whole operation performed as much as possible in imitation of the gradual progress of a natural labour: the only apology for hurry in the operation would be the separation of the placenta, or the compression of the cord in the narrow wound;† but the

* This corresponds with the dissection in the case communicated by Dr. Hunter.

† In the operation by Mr. Hunter, *Med. Obs. and Enq.* V. V, p. 227, the womb strongly contracted round the neck of the child, so as to retard the delivery of the head and press the funis; it is added, that Mr. Hunter soon overcame this stricture sufficiently to let the head be extracted.—By passing

placenta could not possibly be detached in the method now proposed, and it would be possible to guard against the compression of the cord.

The muscular structure of the womb becomes a subject of very great interest in connection with that of *flooding*; it has been proved by the sections of the uterus, made in different states of its contraction, that the order of the muscular fibres is calculated so as to close the vessels; that where nature has provided for the attachment of the placenta, there the broken vessels are guarded by the provision of the surrounding muscular texture; but we know also, that during this contraction of the superior part of the womb, the lower part dilates and relaxes. Now if the contraction of the womb be essential to the safety of the mother, what will be the effect of the attachment of the placenta to a part of the womb which must relax during the labour! Every one knows the peculiar danger of the case of *placenta previa*, that each labour pain, as it returns, increases the violence of the flooding, instead of checking it. In common cases, breaking the membranes and accelerating the labour, checks the flooding, and secures the safety of the patient; but when the placenta is attached to the orifice of the uterus, the reverse of this takes place.

From attention to the muscular structure of the uterus I have been led to conclude, that in common cases of flooding, during labour, the hæmorrhage is not accidental, in any other meaning of the term, than as it proceeds from the place of the uterus to which the placenta is accidentally attached; that the placenta cannot be partially separated if it be attached in a regular circle to the fundus of the uterus; and that flooding on the commencement and during the progress of labour, is

the fore and middle fingers into the womb, so that a finger might lie on each side of the cord, the pulsation of the cord would be free, however powerful the contraction of the uterus. But in truth there is no disposition in the wound to contract.

owing to an irregularity in the shape and attachment of the placenta.

When the placenta is attached in a regular circle to the fundus uteri, it cannot be partially separated, and cannot be separated bodily, until the uterus is permitted to have a great degree of contraction by the delivery of the child; the circular muscles of the fundus being agents in a double capacity, that is, both in expelling the child, and in constricting the uterine vessels; by the time that the child is expelled, the vessels of the fundus are greatly diminished in diameter. Further, the place and strength of these muscles being perfectly regular and uniform, their action must have the effect of equally drawing the surface of the uterus, which is in correspondence with the margin of the placenta, towards the center of the fundus, and consequently of separating the surface of the uterus from the placenta; but no one part of it will be separated until the general restriction is nearly completed. This will not be the case when the margin of the placenta extends irregularly, or when the placenta is attached to the side of the uterus. After the delivery of the child in cases of flooding, it is not uncommon to find a portion of the placenta low down in the uterus, and separated, while the greater portion remains attached to the fundus. In examining the inner surface of the uterus by dissection, I have seen the part corresponding with the placenta irregular in its form, and extending towards the side and neck of the uterus. In such circumstances of the attachment of the placenta, the retraction on the lower part of the womb being to a greater extent than the fundus, will account for the too early separation of that margin of the placenta which stretches towards the orifice, and also for the hæmorrhage, which is a consequence of this partial separation; but in the progress of the labour, and after the discharge of the waters, the more powerful efforts of the uterus draw the muscular fibres more closely around the blood-vessels, and then the flooding ceases.

The flooding which attends the torpor of the uterus in any

circumstances, when the connection with the placenta is broken, will be very easily accounted for on recurring to the details of the anatomy given in the first part of this paper.

On the Effects of Evacuating the Aqueous Humour in Inflammation of the Eyes; and in some Diseases of the Cornea. By JAMES WARDROP, F.R.S. Ed.

[From the London Medico-Chirurgical Transactions for 1813.]

IN January, 1807, some cases of Ophthalmia were published in the Edinburgh Medical and Surgical Journal, in which the evacuation of the aqueous humour was attended with beneficial effects—but at that time, the practice was to be considered only in its infancy, the number of cases in which it had been tried were very limited, and I was unable to point out, with any degree of precision, the particular species of ophthalmia, and the peculiar symptoms of the disease which could be relieved by this mode of treatment. I had, however, sufficient experience to be convinced, that the operation could be performed, in almost every case, without aggravating, if it did not arrest the progress of the inflammatory symptoms; and I therefore embraced that channel of laying my observations before the public, that both the application and the utility of the practice might be established by the additional experience of others.

The subsequent successful result of this mode of treatment in a series of cases of ophthalmia, and its utility in some affections of the cornea, have induced me to bring the subject before the public in this Memoir; being now enabled to point out, with some confidence, the particular species of the disease, and those symptoms, which the evacuation of the aqueous humour is best calculated to remove, and, at the same time, to recommend it as a mode of practice, from which very

important advantages may be derived in some violent and alarming cases.

§ 1. *General Observations on the Evacuation of the Aqueous Humour.*

I formerly took notice,* that I was first led to evacuate the aqueous humour in some of the diseases of the eye from a very curious phenomenon observed by Dr. Barclay in that organ after death. He remarked, that if the eye of an animal be moderately squeezed in the hand, the whole cornea will instantly become cloudy, and that when the pressure is increased, the obscurity also is increased. If it be still more squeezed, the cornea becomes of such an opaque, milky colour, that the iris cannot be distinguished through it. He likewise observed the same appearances to be produced from filling the veins with water or quicksilver; but that, whenever the pressure or over-distending cause was removed, the cornea completely regained its transparency, and appeared as if no such experiment had been made.†

From this curious phenomenon in the dead eye, it was probable that, in the living one, the transparency of the cornea might vary according to the degree of its distension; and that, in some varieties of opacities of the cornea, the obscurity might arise from an increase in the quantity of the contents of the eyeball. Besides, therefore, blood-letting, purging, and the other means usually recommended in the treatment of the inflammation which generally accompanies obscurities of the cornea during the early periods of the disease, it occurred to me, that a more complete and sudden diminution in the contents of the eyeball might be produced by evacuating the aqueous humour.

* Edin. Med. and Surg. Journal, vol. III. p. 56.

† See the Muscular Motions of the Human Body, by John Barclay, M.D.

A favourable case for the trial of this practice soon occurred, where there was a very considerable degree of milkiness and opacity of the cornea, and in which also the eyeball appeared distended, prominent, and accompanied with acute inflammatory symptoms. I discharged the aqueous humour by a small incision through the cornea, and had the satisfaction to find that the operation produced not only an alteration in the degree of transparency of the cornea, but also that the pain, and all the inflammatory symptoms, were removed.

From the success of this case, I was not only convinced of the good effects which this operation might have in removing some opacities in the cornea, but, from the unlooked-for alleviation of the inflammatory symptoms, I was afterwards led to have recourse to this mode of treatment in violent cases of inflammation of the eyeball, in which the cornea had little or no share in the disease.

The evacuation of the aqueous humour in ophthalmia may appear to some, on first considering the subject, a violent and even formidable mode of practice, from the means necessary to accomplish it, consisting in a wound being made in an organ already highly inflamed, and become extremely irritable and painful. But the pain of making a puncture through the cornea is by no means acute, when the cornea itself is not inflamed, or otherwise diseased; and in the operation for the extraction of the cataract, where the cornea is quite sound, I have heard the patients compare the pain in making the incision through it, to a hair drawn across the eye. Though the cornea, in the natural state, has but little sensibility, yet it should be observed, that, if diseased, it becomes the seat of very considerable pain; and when it is inflamed, or when ulceration has taken place on any part of it, the pain of an incision becomes acute: besides, from the irritation which the exposure to light produces in an inflamed eye, and more or less pressure being always necessary to hold the eyeball steady, the evacuation of the aqueous humour cannot be accomplished, in many cases, without giving a considerable degree of uneasiness. The pain,

however, produced by the operation, particularly if it be done with care and attention, soon subsides, and the good effects which quickly succeed, sufficiently compensate for any uneasiness it may have occasioned. Wounds, too, of the cornea heal with uncommon rapidity; and I have not, in a single instance where the operation has been performed, been able to detect the smallest vestige of an incision; nor has it ever occurred, so far as I know, that any visible cicatrix remained, even in those cases in which the operation had been performed when the cornea was in a previous state of ulceration.

In those cases where the practice of evacuating the aqueous humour is judiciously had recourse to, although the operation may create some temporary irritation, yet its good effects will become immediately perceptible, and in most cases will be permanent. The more obvious of these are a more or less considerable improvement in vision, particularly in those cases where there is a cloudiness in the anterior chamber, a complete cessation of the sense of fulness of the eyeball, and pain in the head; and, in some cases, a very remarkable change in the size of the inflamed vessels.

The great and immediate relief which is obtained by the evacuation of the aqueous humour in ophthalmia, most probably arises chiefly from the sudden removal of *tension*. The pain accompanying inflammation in other organs of the body is, in general, in proportion to the degree of tension and resistance of the adjacent parts. It is well known how much relief is afforded in deep-seated inflammations, such as that of the periosteum, and in some varieties of whitloze, by making a free incision through the skin and external parts. The same thing is also illustrated in the good effects produced by dividing the gums during dentition, and in the relief generally afforded by the evacuation of the matter of an abscess. In the eye itself this observation is very strikingly applicable; for it often happens, in violent cases of ophthalmia, that suppuration takes place within the globe, and the purulent matter and humours are suddenly discharged by the coats of the eye burst-

ing. Whenever this takes place, it is invariably remarked, that all the inflammatory symptoms are suddenly alleviated.

There is a case mentioned by Prochaska,* where the aqueous humour was so acrid as to tarnish the cataract knife; yet this change does not appear ever to take place in ophthalmia. I have also heard of a case, where the point of a knife, which was broken off in the anterior chamber, was rapidly oxydated and absorbed.

In those cases where the discharge of the aqueous humour has been found beneficial, it is not even necessary to suppose that its natural quantity is increased. The inflammation will add both to the number and to the size of the blood-vessels within the eyeball, and consequently will increase the quantity of its contents; therefore, if the pain and any of the other symptoms arise, or are aggravated by that unnatural distension, the same good effects will result, whether the contents of the eyeball be lessened by a diminution in the number and size of the blood-vessels, or by the discharge of the aqueous humour. In many cases of ophthalmia, it is very probable that either of these means would have the effect of abating the violence of the inflammatory symptoms; that in some cases the one shall be useful, whilst the other fails; and that, in very violent cases, both means may be employed at the same time with much advantage. It is not, therefore, to be understood, that the discharge of the aqueous humour is here to be recommended as the sole remedy in any case of ophthalmia, but is only to be considered as a powerful auxiliary in some cases, and in others as a sure, and perhaps the only means of preventing the total destruction of the organ.

When the object is to diminish suddenly the contents of the eyeball, the evacuation of the aqueous humour must fulfil this intention in a more complete manner than we can conceive probable to be effected by any means we have of ab-

* Vide Voigtel Handbuch von der Pathologischen Anatomie, II Band, p. 110.

stracting blood from its vessels; for as the ophthalmic artery comes from the encephalon, little blood can be taken directly from any of its branches, and it would require a great quantity of blood to be drawn from the temples, or neighbouring arteries, to make any remarkable change in the quantity of the contents of the eyeball; or, at least, a change equal to that which would be produced by the discharge of the aqueous humour. From the advantages also which have been universally found to arise from a sudden depletion of blood, in comparison with what can be derived from a slow detraction, considerable benefit might be expected from the practice now proposed; for as its effects must be immediate, a sudden change will be produced in the state of the organ, and a change favourable to the abatement of the inflammatory symptoms.

§ 2. *Of those Cases of Ophthalmia which are relieved by the Evacuation of the Aqueous Humour.*

From the number and variety in the phenomena which accompany inflammation of the eyes, from the combinations and various modifications of those phenomena, and from the fruitless attempts which have been made to describe the different species of the disease, it becomes difficult to point out with precision, in this place, those particular forms of it, in which the propriety of discharging the aqueous humour is indicated. It would be foreign to the object of the present memoir to enter into any elaborate description of the different species of inflammation of the eyes, my intention being to attempt this in a future publication. It will now be sufficient to remark, in general, that those parts composing the organ of vision, in which there is a difference in the natural structure, present different phenomena when they become inflamed. Inflammation of the conjunctiva or mucous membrane of the eye is accompanied with that puriform discharge so characteristic of

all inflamed mucous surfaces, as that of the urethra, vagina, bronchiae, nose, and every other surface of a similar nature in the body. Inflammation of the different structures which compose the cornea, inflammation of the iris, of the choroid coat, of the sclerotic coat, and of its investing cellular membrane, all present a variety of distinct and characteristic symptoms. Besides this difference, arising from a difference in the natural structure of the parts affected, there are distinct species of inflammation which derive their particular characters from being the effect of specific diseases. Of these we have examples in scrophula, cancer, lues venerea, rheumatism, and gonorrhea; all of which occasionally attack the eyes, in common with most other organs of the body. In all these species of ophthalmia particular examples do occur, in which the aqueous humour may be discharged with advantage; for though the inflammation almost always originates, and is most severe, in one of the textures of the organ; yet the whole eye is in many cases more or less affected; and thus symptoms arise which the evacuation of the aqueous humour is well calculated to remove.

I shall therefore, after describing the mode of performing the operation, enumerate those forms of ophthalmia in which the practice has been found beneficial, and illustrate these observations with the history of some cases. Before, however, entering into this detail, I may observe, in general, that there are no states of the eye in which this treatment is so applicable as in those cases where the coats threaten to give way; for, as was before mentioned, many authors, who have described ophthalmia, have particularly noticed, that when the eye bursts, whether from internal suppuration, or from ulceration of the cornea, a remarkable alleviation takes place in the pain, and an abatement in all the other inflammatory symptoms. In the puriform, or, as it is often called, the Egyptian ophthalmia, this is the usual termination of the severe cases of the disease, and is that change which, by producing

a collapse of the globe of the eye, renders the organ irrecoverable.

But besides these, there are cases of a very different description,—in which the evacuation of the aqueous humour is of much advantage, and where the disease, though not of such a dangerous nature, is yet found unmanageable by the means usually employed.

The particular cases now alluded to, are those in which the cornea and anterior chamber acquire a peculiar kind of dimness, the transparency being restored, and the accompanying inflammatory symptoms alleviated, by the discharge of the aqueous humour.

Besides the peculiar muddiness in the anterior chamber, these cases are characterised by an uneasy feeling of distension in some part of the head, chiefly the forehead; and this symptom generally yields to the evacuation of the aqueous humour.

§ 3. *Of the Mode of discharging the Aqueous Humour.*

The aqueous humour may be discharged by a very simple operation, nothing more being necessary, than to make an opening through the cornea, of a sufficient size to allow that fluid to escape, and in such a situation that any subsequent cicatrix may not impair vision.

The opening may be made with any of the knives commonly used for extracting the cataract. It is sufficient that the point of the knife be introduced so that it makes a puncture into the anterior chamber; and this should be done near the junction of the cornea and sclerotic coat, at any part of the circumference. When the knife has penetrated the anterior chamber, it may then be withdrawn a little, and the blade turned on its axis, so that the aqueous humour will readily escape; and it is better not to remove the instrument altogether, till the fluid is observed to be discharged; for if the inci-

sion be not sufficiently large, and the knife taken away before the aqueous humour flows out, the elasticity of the cornea closes the wound, and either hinders the evacuation from being so sudden, and consequently so efficacious, or the closure of the wound entirely prevents its escape. The operation, therefore, which is necessary to discharge the aqueous humour, is merely the first step of the section of the cornea, made in extracting the cataract, or what has been called *the punctuation of the cornea*.

The chief difficulty in performing the operation arises from the pain occasioned by the necessary pressure on the eyeball, whilst keeping open the eyelids; but until a sufficient portion of the cornea is brought into view, and the movements of the eyeball completely under the management of the operator, the introduction of the knife should not be attempted.

The upper eyelid should be kept open either by the fingers of an assistant, or by Pellier's speculum. If the latter be employed, it will be found useful to have the silver wire covered with a piece of crape, which will prevent its slipping from any moisture of the skin, an accident very common and very troublesome. The operator, with the fore and middle fingers of one hand presses down the under eyelid, and applies their points over the tarsi, in such a manner that they touch the eyeball, and can apply any degree of pressure upon it which may be necessary. After the assistant raises the upper eyelid, the patient should be directed to look downwards; and the assistant then employs a sufficient pressure, to keep the eye in that position.

The operator may then make the puncture; but as the patient is very apt to start when he first finds the instrument coming in contact with his eye, I have found it useful, merely to touch the cornea repeatedly with the back of the knife till all risk of starting is over; and as soon as the back of the extremity of the instrument rests on the part where the puncture is to be made, the knife can be raised very steadily on its point, and then the point thrust into the anterior chamber.

Though I have described the method by which the puncture of the cornea may be made with a common extracting knife, yet it is evident that the aqueous humour may be discharged equally well by other instruments, such as a couching-needle; and of late I have been in the habit of generally employing the instrument of Mr. Cheselden. The more we are in the habit of using any particular instrument, the more dexterity and ease do we acquire in its use.

§ 4. *Of the Evacuation of the Aqueous Humour in the Puriform Ophthalmia.*

There is no fact more striking in the history of the purulent ophthalmia, than the immediate and permanent relief which many of those unfortunate sufferers experienced, when the eyeball burst, and part of its contents was discharged. During the most excruciating pain of the eye and head, their agony was suddenly relieved when this accident took place, which in some cases was even accompanied by a cracking noise. This is particularly taken notice of by those who have related the history of the disease, and it will be found a striking incident in all the accounts given by patients themselves, in whom the organisation of the eye is found to be destroyed.

An artificial mode of diminishing the contents of the eyeball might, in such cases, be naturally expected, not only to produce the same alleviation of the violent symptoms of the disease, but by preventing the rupture of the cornea, and the subsequent protrusion of the iris, which takes place, would save the organ from that total destruction which is almost the inevitable consequence of the natural progress of the disease. The evacuation of the aqueous humour is well calculated to fulfil this purpose, and in a very considerable number of cases has been followed with the happiest effects. Mr. Ware, whose authority is so well entitled to our respect, first mentioned to me the probable good effects which the evacuation of the

aqueous humour might be expected to produce, in those cases where the eyeball shows a tendency to burst; and in some remarks which he afterwards published on the purulent ophthalmia this practice is recommended, and two cases are given where it was successfully employed. The practice has also been adopted in this species of ophthalmia to a very considerable extent, by Mr. Macgregor, surgeon to the York asylum.* "I have, within the last two years, (Mr. M. remarks) performed this operation in twenty-three instances, with a degree of success that strongly induces me to recommend it. For of this number, twenty-one were immediately relieved by it, and afterwards recovered their sight under the usual mode of treatment." And again Mr. M. observes, "It is to be regretted that this operation is not more frequently performed; for I am convinced that many persons have lost their sight from a rupture of the cornea taking place at that part opposite the pupil, which a timely and judicious performance of this operation might have prevented." As in the greater proportion of the cases which have come under my observation, the disease has been particularly mild, I have had no opportunity of reaping the benefits of this operation; for, among several hundred examples, there has not been one case where the cornea burst, or where suppuration took place within the eyeball: all the more severe symptoms being speedily removed by bleeding, purging, and a strict purgance of the antiphlogistic regimen.

The more violent cases of this ophthalmia have appeared chiefly in the army, and it is therefore in our military hospitals, where we can expect to find most advantage from this practice.

In addition, therefore, to the other means commonly employed, more particularly bleeding and purging, the evacuation of the aqueous humour must be considered as a useful

* Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. iii. p. 60.

remedy in the puriform ophthalmia. Its introduction into those countries where the disease is particularly prevalent, and where it appears in the most severe and dangerous forms, would be attended with the most beneficial effects, and its judicious employment might be the means of saving the eyes of many of our soldiers who are abroad, more particularly those on the Mediterranean stations.

Little difficulty can occur in selecting the fit cases, and in determining the proper period for performing the operation. No states of the eye, during the progress of this disease, can arise, as far as I know, which could render it improper, provided the accompanying symptoms are in any degree severe; and therefore the practice should be had recourse to, in all cases where the pain in the head and sense of distension in the eyeball are considerable. In those cases where the cornea threatens to burst, the operation becomes particularly urgent, and should be had recourse to without delay. The bursting of the cornea, in some cases, is preceded by an apparent change in the structure of that part of the eye; in other cases no previous alteration can be detected. The changes generally observed are, that the cornea becomes muddy in one part, or over the whole surface; or its surface is studded with small white spots, which run into one another, as the inflammation advances to suppuration; and then ulceration of the cornea, to a greater or less extent, always takes place. In other cases, the cornea suddenly gives way, without any apparent previous change.* This has been particularly taken notice of by Dr. Veitch, and he remarks, that in some cases of this ophthalmia, where he had an opportunity of examining the eye, both immediately before and after the aqueous humour was discharged, this fluid had escaped "by a division of the cornea, which was nearly as clean as if it had been cut with a knife." In the purulent ophthalmia of children, I have had repeated opportunities of making the same remark, and

* Observations on Ophthalmia, by Charles Farrel, M.D.

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observing a straight division toward the centre of the cornea, the adjacent cornea being apparently sound.

§ 5. Of the Evacuation of the Aqueous Humour in the Puriform Ophthalmia of Children.

The history, symptoms and consequences of the puriform ophthalmia in children, are so extremely similar to those of the puriform ophthalmia of the adult, that what has been said of the effects of evacuating the aqueous humour in the one, may be repeated regarding the other. When the inflammation arising in the conjunctiva advances to the other textures of the eye, and is not arrested in its progress, the eyeball often bursts by a rupture of the cornea. Now when there is any danger of apprehending such an accident, when an ulcer of the cornea is making rapid progress, or where the violence of the inflammatory symptoms indicate the danger of a rupture of the cornea, the aqueous humour may be evacuated, with the hope, not only of alleviating the severe symptoms of the disease, but of preventing that destruction of the cornea which is always followed by a change in the form of the eyeball, an opacity of more or less of the cornea, a displacement of the iris, and a deformity or destruction of the pupil.

§ 6. Of the Evacuation of the Aqueous Humour in the Gonorrheal Ophthalmia.

Though we have no means of arresting the progress of some specific diseases, yet a great deal may be done to mitigate their symptoms. When the eye becomes affected with gonorrheal ophthalmia, the progress of the disease is generally so rapid, and the symptoms of it so severe, that the most powerful remedies are necessary to prevent its speedy destruction. Besides, therefore, the extensive depletive system,

which should in such cases be adopted, it will be of great importance to watch the progress of the disease in the anterior chamber, and when any symptoms do occur which indicate a rupture of the cornea, the aqueous humour should be evacuated without delay.

§ 7. Of the Discharge of the Aqueous Humour, where the Capsule of that Humour is inflamed.

On a former occasion* I attempted to show, that each of the three distinct textures which compose the cornea may be separately inflamed. There is no inflammation of the eye, where so much benefit is derived from evacuating the aqueous humour, as when that inflammation affects the internal layer of the cornea or membrane which contains the aqueous humour.

This disease is marked by a muddiness or turbidity of the anterior chamber, which an ordinary observer would not readily ascribe either to an opacity of the cornea, or to a diminution in the transparency of the aqueous humour. Besides this diffused cloudiness there are generally one or more defined spots, which distinctly denote an opacity of the cornea. These do not resemble a common speck, but have a mottled appearance, and around the opaque, white, central points there is a kind of disk, very like what we perceive in some agates, and what are commonly called the eyes of pebbles.—There is not much external redness accompanying the obscure anterior chamber—a blush of vessels only being seen around the sclerotic coat, at that place where the iris is attached to it; neither does the patient seem to suffer much pain from the effects of light, as he can generally open the eyelids and keep them so, and finds no benefit from a shade. The symptoms of this disease which are most distressing, are a sense of fulness and

* *Essays on the Morbid Anatomy of the Eye*, p. 2.

distension of the eyeball—as if it was filled with matter, and a dull agonizing pain, generally either in the brow or back part of the head; or in both these parts.

In this disease I have never found the evacuation of the aqueous humour fail in procuring an immediate relief of the pain of the head, and an instantaneous restoration of the transparency of the anterior chamber.

CASE I.

A woman, fifty years of age, had a general milkiness of the anterior chamber of the left eye, and a slightly opaque spot nearly on the centre of the cornea. On the white of the eye there were a considerable number of distinct red vessels, none of which passed over the cornea. She could distinguish light with this eye, or a dark object placed between her and the light; but neither form nor colours. Exposure to light gave her little uneasiness.—Had occasional epiphora, but particularly complained of a dull pain, extending through the head and eyeball.

The affection had lasted about a fortnight. After having had headach during the night, she found the eye red and painful when she awoke, and objects appeared as if seen through a mist. The symptoms had afterwards gradually increased.

Treatment.—I discharged the aqueous humour by a puncture through the cornea; and immediately after the operation she could perceive a finger with a ring on it, which was held before her eye.—She complained of a sensation as if a mote were in the eye, but she felt no acute pain. The cornea immediately regained its natural transparency, except at the speck, which became more distinctly circumscribed.

Some hours after the operation, the pain recurred with considerable violence, but it was relieved by the operation of a purge, fomenting the parts adjacent to the eyeball, and cup-

ping the temples; and in a few days the eye was quite recovered.

CASE II.

In a youth fifteen years of age, the anterior chamber of the right eye had lost a good deal of its natural transparency, which appeared as if it proceeded partly from an obscurity of the cornea, and partly from a turbidity of the aqueous humour. There was a bright crimson redness over the whole albuginea; the vessels appeared deep, yet their ramifications were distinct. He complained of a sense of fulness in the eyeball, and of a dull, heavy pain in the orbit, eyebrow, and extending through the head. The pain of the eye was much increased by exposure to light. The inflammation had existed for three weeks, and had from its commencement been attended with the pain in the head.

Treatment.—The pain in the brow and head subsided immediately after the aqueous humour was discharged, and in the course of two days, the redness and obscurity of the anterior chamber went off.

CASE III.

There was a want of transparency in the anterior chamber of the right eye, which seemed, partly, to proceed from an opacity of the cornea, and partly, from a turbidness of the anterior chamber.

A bright scarlet-coloured inflammation appeared over the whole albuginea, and the vessels seemed deep, but the ramifications were quite distinct. Exposure to light was very painful, and the patient complained of a sense of fulness in the eyeball, and of a heavy pain in the orbit, and brow, extending through the head. The inflammation had continued three

weeks, and from its commencement had been attended with pain in the head.

Treatment.—The aqueous humour was discharged, and, immediately afterwards, the pain in the brow and head completely subsided. The smarting from the operation continued only for a few minutes. He could open his eyes more freely. Redness increased, but of a darker shade, and the vessels appeared more tortuous. No pain in the eye.

CASE IV.

A sailor boy, thirteen years of age, felt an itching sensation in his right eye, which, by constant rubbing, became red and painful. About eight weeks after, he was at sea during a storm of thunder and lightning, which increased the inflammation. The left eye also, at that time, became affected. I saw him about ten weeks after the first attack. The anterior chamber of the left eye had become dull and cloudy; and there were three or more milk-white spots on the cornea, of the size of a pin's head, perfectly round, and distinctly circumscribed. The pupil was a little contracted; and there was only a very slight redness of the sclerotica, near to its union with the cornea. There was also a general cloudiness of the cornea of the right eye; and, on the inferior part of it, there was a speck of considerable size, with several red vessels ramified through it. There were also some small opake circular specks on different parts of the cornea. The blood-vessels were more numerous on the sclerotica of this eye than of the left. Exposure to light gave him acute pain in both eyes, and made them gush with tears. He had violent pain in both eyes, but particularly in the right; and he described the pain as having been extremely severe the day before, through his whole head. He also felt a sense of distension or weight over the eyebrow, and had a little general fever. A by-stander observed, that his eyes appeared too full.

I made an incision into the cornea of the left eye, and the aqueous humour spirted out forcibly. The operation occasioned smart pain for two or three minutes. A little blood afterwards appeared in the anterior chamber, which was effused in consequence of the division of the red vessels which entered the edge of the cornea. The operation was afterwards performed on the right eye, and it caused more acute pain than in the left, for the incision was made through a cornea which was highly vascular, and had acquired a morbid degree of sensibility. In a few minutes, all the pain, which he conceived to arise from the cut, subsided; and the uneasy fullness and distension in both eyes were greatly diminished. He was ordered to use fomentations, and to take a purgative medicine. I saw him three days afterwards: he had no return of the pain of the eye or head since the operation: he could endure the light; and his vision was so perfect, that he walked two miles, and could distinguish readily, and without uneasiness, all objects around him. The opacities of the cornea of both eyes were greatly diminished; and there was very slight redness of the sclerótica.

CASE V.

A healthy-looking man, forty-five years of age, had inflammation in both eyes for six weeks, which began after the abatement of a violent pain of his head. There was a general cloudiness of the cornea of the left eye. The iris could be distinguished but indistinctly. There were numerous vessels on the white of the eye; and they formed clusters on different parts, giving it a mottled appearance. The eye looked unnaturally dry; and there was no intolerance of light. The disease in the right eye had the same appearance; but the cloudiness was limited to two thirds of the cornea; and the red vessels were not so numerous as in the left eye. The vision of the left eye was almost entirely destroyed; and with the right one,

objects appeared as if seen through a mist or smoke. Both eyes looked full and prominent. An eye-water, of corrosive sublimate, and the application of an ointment composed of the red oxyd of mercury, diminished, in a few days, the inflammation and opacity of the right eye. The obscurity of the left cornea, however, increased, so that the iris and pupil were very indistinctly seen through it.

: *Treatment.*—I perforated the left cornea with a spear-pointed couching-needle, and immediately it appeared clearer to several by-standers. The operation was attended with no pain, neither was it followed by any inflammation. He afterwards used a wash of the nitrate of quicksilver, and the cornea soon regained its transparency. The pupil, however, remained a little irregular, with a slight dimness behind it; and objects appeared with this eye as if through a mist. By the external application of sulphuric æther, the dimness disappeared; and I saw him eight months afterwards, when he told me that he then saw as well as when he was a boy; for he had been short-sighted before his eyes became inflamed; and probably the operation had diminished the natural convexity of the cornea.

§ 8. *Of the Evacuation of the Aqueous Humour in Abscess of the Anterior Chamber.*

In all cases where a puriform fluid is forming in the anterior chamber, the evacuation of the aqueous humour will be found highly useful; for, except in a very few remarkable instances, this never occurs where the inflammatory symptoms are mild. In most cases the deposition of a puriform fluid is attended with great pain in the eye and head, and a sense of fulness and tension of the eyeball. When these symptoms are not subdued by the common methods of treatment, ulceration of the cornea takes place, and the matter, along with the aqueous humour, is discharged, whilst more or less of the iris is protruded through the wound. The artificial discharge

of the aqueous humour in the early stages of the disease, alleviates all the inflammatory symptoms, whilst the employment of the same means in the more advanced stages of the complaint, invariably prevents that rupture of the coats of the eye, which in general very much impairs, if it does not entirely destroy its organization.

In some cases the matter deposited in the anterior chamber, has a considerable degree of consistence and tenacity, and will not be discharged by that puncture which is sufficient to evacuate the aqueous humour. When the matter is in small quantity, it is necessary to discharge only the aqueous humour, for, if the inflammatory symptoms be alleviated, the matter will afterwards be speedily absorbed; but in those cases where the quantity collected is considerable, and necessary to be evacuated, it is requisite to make an incision in the cornea nearly equal to that for the extraction of the crystalline lens.

CASE VI.

A man forty-five years of age, had a violent inflammation of the whole eyeball in consequence of a blow which he received on it three weeks before from a piece of coal, when mining. Nearly one half of the anterior chamber was filled with a puriform fluid. The central part of the cornea was opaque, and ulceration was commenced on its surface, and he complained of violent pain both in the eye and head. A semi-circular incision was made in the cornea, through which the aqueous humour along with the matter were evacuated. The pain ceased instantly. The wound of the cornea soon healed, no inflammatory symptoms returned, and the cornea regained its transparency by the application of stimulants, leaving only a small speck. It was evident, that in this case the cornea would have soon given way where the ulceration had commenced; by which the organ would have been completely destroyed.

CASE VII.

A gentleman, about twenty-one years of age, had a very violent inflammation of the left eyeball. The sclerotica was covered with numerous scarlet-coloured blood-vessels; but none of them passed over the transparent cornea. The anterior chamber was turbid; and several small spots, of a matter resembling pus, were seen in it, towards its circumference. The pupil was much contracted, the eyelids swelled, and their external surface covered with varicose veins. There was a constant flow of acrid tears. Vision was almost entirely destroyed; but, notwithstanding, the eye was extremely sensible to light. He had great pain in the eyeball, and constant headach, with a sense of fulness in the orbit. The inflammation had begun five weeks before, without any known cause, and every symptom had, since that time, gradually increased.

Treatment.—I made a puncture with an extracting-knife through the cornea, and the aqueous humour spirted out. From the difficulty in securing the eyeball, the pressure employed gave considerable pain. The incision smarted for two or three minutes; but, before I left the room, he said he found great relief; and that the pain in the eyeball and head, and the peculiar feeling of weight and distension, were entirely removed. On examining the anterior chamber, all the turbidness had disappeared, and the cornea seemed perfectly transparent. He was advised to do nothing but foment the eye and the neighbouring parts, and to take a purge. As he lived at some distance from town, I had no opportunity of seeing him afterwards; but I was informed, that an hour after the operation, all the pain, occasioned by the incision and the pressure, was entirely gone, and the eye had become quite easy. In two days all the redness went off; and I was informed, that the mark of the incision could not be discovered; that the inflammation had disappeared; and that his vision was nearly as perfect as it had been before the commencement of the dis-

case. Some months afterwards, I heard that he continued perfectly well.

§ 9. *Of the Effects of discharging the Aqueous Humour in Staphyloma.*

The effects which are produced by discharging the aqueous humour in some cases of staphyloma, illustrate in a very satisfactory manner, the mode by which this operation seems to alleviate the symptoms of ophthalmia which have been already noticed. For in many cases of this disease, whilst the staphylomatous tumour is increasing in bulk, the ball of the eye becomes inflamed, and the patient generally complains not only of a sensation of uneasiness and fulness in the eye itself, but of a pain more or less severe in the brow of the affected side; and, under these circumstances, the escape of the aqueous humour fails not to produce immediate relief, and none of the inflammatory symptoms recur until a regeneration of that fluid takes place.

The aqueous humour is often evacuated without the interference of art, the portion of the cornea which most easily gives way allowing an exit to that fluid. In several cases I have been able to observe this process frequently take place, so that ultimately a fistulous opening was established, which either remained always pervious, or which was occasionally closed by a thin, pellucid membrane which gave way, wherever a superabundant quantity of fluid was collected in the eyeball.

This natural progress of the disease points out a very easy method of affording relief when the pain and inflammatory symptoms are severe: under such circumstances, the aqueous humour may be evacuated by puncturing the tumour, an operation which cannot fail to alleviate all the symptoms, in as complete a manner as would be fulfilled by that process which nature would ultimately have accomplished.

CASE VIII.

A gentleman who had a staphyloma of one eye for some years, produced in consequence of a severe attack of inflammation, but which, till now, had given him little pain or uneasiness, was suddenly seized with pain in it, which soon spread to the brow and back part of the head; and became so agonizing, that in a few hours he was nearly distracted with its severity. He became extremely pale, and his pulse was very feeble.

Treatment.—I discharged the aqueous humour, from which he obtained instant relief; and in a few hours he was perfectly recovered. He was three or four times similarly attacked, at the intervals of several weeks. The discharge of the aqueous humour was each time followed with instant and complete relief; and in order to prevent the recurrence of the symptoms, after puncturing the most prominent part of the cornea, I cut out a small circular portion of it. This opening was afterwards covered with a thin pellucid membrane, which readily gave way whenever there was a superabundance of the aqueous humour; and since the opening hath been made, he has remained free from pain.

CASE IX.

A woman received a sharp blow on her eye, which was considerably enlarged from a staphyloma. Two days afterwards the diseased eyeball was inflamed, extremely sensible to the touch, and she complained of a severe pain in the brow, extending through the head, accompanied by great prostration of strength, sickness, and fever. I punctured the staphyloma, and discharged a bloody fluid, after which she received much relief: the pain in the head disappeared, and the eye became easier. Four days afterwards the pain returned, but complete

relief was obtained by again evacuating the contents of the staphyloma.

It is very probable, that in this case all the violent symptoms were produced from an effusion of blood within the eyeball, in consequence of the injury.

§ 10. Of the Effects of evacuating the Aqueous Humour in Pro-lapsus of the Iris.

Even after the cornea has given way, and the aqueous humour has been evacuated, in severe cases of ophthalmia, the relief which that discharge produces does not remain permanent, for the portion of the iris which is prolapsed, so completely fills up the wound, that no more aqueous humour can escape, should its quantity become superabundant. Under such circumstances, an artificial discharge not only alleviates the inflammatory symptoms, but, if the protrusion of the iris has been recent, the depletion of the anterior chamber will permit the iris to fall back into its natural situation. In a case of this kind, where Mr. Ware performed the operation, immediately after the evacuation of the aqueous humour, the iris resumed its natural position. Should the iris still continue to be pressed forward, even after a puncture has been made on the cornea, recourse might then be advantageously had to the ingenious proposal of the late Mr. Gibson of Manchester. When the iris was prolapsed, either through a wound or ulcer of the cornea, Mr. G. found that the displacement arose from the portion of the aqueous humour lodged behind the iris, constantly pressing that membrane forwards at the point where there was least resistance. In such cases he made a puncture in the prolapsed portion of iris; and when the fluid collected behind it was discharged, it immediately regained its natural situation; unless in those cases, where, from the duration of the disease, the situation of the iris had become unalterable, from adhesions having formed between it and that portion of the cornea with which it was in contact.

§ 11. *Of the Effects of evacuating the Aqueous Humour, in Injuries of the Eyeball.*

Injuries of the eyeball are very often followed by severe and tedious attacks of inflammation, more particularly when from punctured wounds, and wounds penetrating into any of the cavities.

Besides a powerful antiphlogistic treatment, much benefit will often be derived by discharging the aqueous humour, especially in those cases where, along with pain and redness of the eye, there is a sense of fulness and dull pain about the eyebrow, or some other part of the head;—symptoms of ophthalmia, which, it has already been remarked, the evacuation of the aqueous humour is particularly well calculated to remove. In all cases, too, where there is a tendency to the formation of matter after injuries of the eye, the discharge of the aqueous humour becomes a powerful auxiliary to the other means usually employed.

CASE X.

At the union of the cornea and sclerotica of the eye of a middle aged woman, towards the upper and nasal part, there was a prominent bluish-coloured tumour, covered with a network of red vessels, and the iris was drawn towards that part, so that the pupil was of an oblong form. There were a good number of red vessels over the sclerotic coat, and a dimness of the whole anterior chamber.

She complained of much pain in the eyeball, but particularly in the brow and temples. Her sight was impaired, and the pulse frequent and full. About eight days before, she had received a wound of the eye, either from the spur or beak of a cock. All the symptoms were alleviated by the discharge of the aqueous humour, particularly the pain in the head, which was instantly removed; and the redness of the conjunctiva was much diminished. A slight heaviness about the eyebrow re-

maintained for a day or two, but went off by the use of brisk purgatives.

CASE XI.

While a strong healthy man was employed hammering melted iron, a piece of it fell into the eye, and was found lying between the eyeball and under eyelid. It occasioned most excruciating pain, and although it was removed in a few minutes, violent inflammation succeeded, and I saw him four days after the accident. The whole conjunctiva was then very much inflamed, and it was so much swelled, that the cornea appeared as if depressed. There was a white slough towards the inferior part of the sclerotic coat, and on the corresponding portion of the internal palpebral membrane; but the cornea was not injured, nor its transparency diminished. He complained of great pain in the ball of the eye, extending over the forehead, and through the whole side of the head. He could not raise the upper eyelid without the assistance of his finger. Light gave considerable uneasiness, and his vision was so much destroyed, that he could only distinguish between light and darkness.

Treatment.—Under these circumstances I discharged the aqueous humour by making a small opening through the transparent cornea. The operation occasioned a smarting pain, which lasted a few seconds; when it went off, he said he could open the eyelid much easier; and was surprised to find that he could even distinguish the furniture of the room and books in a library. Slight scarifications were afterwards made on the under eyelid, which bled freely; and he was advised to foment the temples and adjacent parts; and as his pulse was frequent and full, he was bled at the arm, and ordered a brisk purge. During the remaining part of the day, the pain of the eyeball was much alleviated, and that of the head was completely removed, except that an uneasy sensation still remained in the brow. On the following day there was no vestige of the wound of the cornea; the pain and swelling of the conjunctiva were

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nearly gone, but the redness continued. His vision was quite distinct, but the eye was irritable. In three days, by the application of an opiate, the inflammation was completely removed, his vision perfectly restored, and he returned home complaining merely of a little tenderness. Since which he has remained well.

A case of inflammation of the eye, occasioned by a burn, exactly similar to the case just related, though the symptoms were not so severe, was completely relieved by the evacuation of the aqueous humour, which suddenly mitigated the pain, and removed all the inflammatory symptoms.

§ 12. *Of the Changes produced in Opacities of the Cornea from the Discharge of the Aqueous Humour.*

It has already been observed that a diminution might take place in the transparency of the cornea, from an alteration in the quantity of the contents of the eyeball, and it has also been noticed, that in the dead eye the cornea assumes a milky colour when pressure is applied upon the eyeball, or when the veins are injected with clear water.

That some opacities of the cornea are produced from an increase in the quantity of the contents of the eyeball, and not from the deposition of an albuminous fluid in the texture of the cornea, as takes place in common speck, seems to be proved from the immediate effects which have resulted, in some instances, from the discharge of the aqueous humour. In these cases the opacity of the cornea seemed entirely to arise from over-distension; for the instant the aqueous humour was discharged, the cornea regained its natural transparency, as imitated in the experiments on the dead eye. In other cases it was evident, that the opacity of the cornea depended on two distinct causes; the one, as in the former cases, arising from over-distension,—whilst the other proceeded from that change in the structure of the cornea which produces common speck. Cases of the first class are distinguished by a cloudiness or

turbid state of the whole anterior chamber; whereas in common speck the obscurity is more defined, being limited to a certain portion of the cornea.

These two different kinds of opacity were strikingly illustrated, in some instances, where both took place in one eye at the same time, there being a general dimness throughout the whole anterior chamber, besides some defined spots in particular parts of the cornea. In these cases, the instant the aqueous humour was discharged, all the general obscurity disappeared, and nothing remained but the more opaque spots, which became more distinctly circumscribed.

From what has been already said, little difficulty will arise in selecting those cases of opacity of the cornea, which the evacuation of the aqueous humour is calculated to remedy. From the cases, the particulars of which are detailed, the beneficial effects of the operation are sufficiently obvious, and would lead us to expect very important results from future experience.

CASE XII.

In a girl, twelve years of age, the whole of the white of the right eyeball had become of a bright red colour, from a number of blood-vessels, whose trunks could all be separately distinguished running in straight lines towards the cornea, and some of their small branches passed over its edge, and were distributed into its substance. There was a circular-shaped speck, of a considerable size, near the centre of the cornea; and throughout the rest of the cornea, particularly around the speck, there was a good deal of muddiness. The upper eyelid was slightly swelled, with some varicose veins on its external surface; whilst the vessels of the internal membrane were increased in number and in size. She had a good deal of pain in the eyeball, but it was particularly severe in the side of the head and temple above the affected eye. Though the vision was destroyed, yet she complained when the eye

was exposed to a bright light. The disease had continued three weeks. It began with the sensation of a mote in the eye, attended with pain; the following morning it was very red, and every symptom had increased daily.

Treatment.—The aqueous humour was discharged, which caused a good deal of smarting, but in a few minutes it subsided. A great change took place in the transparency of the cornea, all the general cloudiness instantly going away, and the speck left much more distinctly circumscribed. During the course of the day the pain of the head and eye went off, and she slept well during the night, whereas formerly her nights were very restless and disturbed by startings. On the day subsequent to the operation, she had not the least pain in the head or eye; the eye was not very sensible to light, and the number of blood-vessels was very much diminished. She could now readily distinguish all her fingers, and observe large objects at a considerable distance.

CASE XIII.

The eyeball of a woman, thirty-eight years of age, was very much inflamed, and some spots of a purulent looking fluid were seen in the anterior chamber; whilst, at the same time, there was a considerable degree of opacity throughout the cornea. She complained of an intense pain of the eyeball, and in the forehead and temples. The disease was of three weeks standing.

Treatment.—The aqueous humour was discharged, the parts were afterwards fomented, and she took a brisk purge. On the following day the pain of the head was much easier, and the blood-vessels were less numerous.—She rapidly got well.

CASE XIV.

A lady, thirty-two years of age, had complained, during eleven weeks, of an inflammation in her right eye, attended

with pain occasionally in the forehead, and inability to look at objects. There was a very opaque speck of the cornea opposite the pupil, with a degree of turbidness around it, so that nearly the whole pupil was hid; the white of the eye was slightly red, and the eyelids were of a purple colour towards the edges; the eye watery. Scarifications, opiates, and stimulants, gave no relief.

Treatment.—The aqueous humour was discharged, and instantly the whole speck, except a small central portion, disappeared, and she could distinctly see with this eye immediately afterwards. All the inflammatory symptoms subsided in a few days by fomentations.

CASE XV.

The whole of the white of the eye of a healthy middle-aged man was crowded with vessels of a large size, and of a bright red colour: these vessels all terminated at the margin of the cornea, ran in a straight direction towards it, and did not ramify until they approached it, and there they divided into numerous branches. The transparency of the anterior chamber was diminished, and all objects appeared dim. The eyelids were a little swelled, and the blood-vessels on their internal surface, though not much increased in number, were enlarged and turgid. He had a violent pain in the forehead, which was not constant, but came on in such severe paroxysms that he could scarcely support their violence. The inflammation had come on four days before without any evident cause.

Treatment.—When the aqueous humour was discharged, the anterior chamber acquired its natural transparency, and he could more clearly distinguish objects. A remarkable change took place in the blood-vessels of the white of the eye; the number of them was so much diminished, and also their size, that the eye at once lost all the appearances of inflammation.

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Besides ordering a purge, and applying fomentations to the eye, it was thought proper to bleed this patient, from the violence of the inflammation and its accompanying fever. Under that treatment he got well rapidly.

Two Cases of Ulcers in the Cornea, where the Aqueous Humour was advantageously discharged.

CASE XVI.

In a young lady the anterior chamber of one eye appeared very turbid, and there was an *ulcer* on the central part of the cornea, and a cluster of blood-vessels passing towards it; the whole eyeball was much inflamed, having the peculiar redness of the pustulous ophthalmia.* She complained of an agonizing pain in the forehead, which sometimes went off during the day, but was always severe in the night. The inflammation had lasted fifteen days, the pain in the head only eight days; little sleep, pulse quick, and the tongue white.

Treatment.—Discharged the aqueous humour by puncturing the cornea at the place where the vessels passed. The pain in the head never afterwards returned; and all the other symptoms rapidly subsided by the use of fomentations, and the vinous tincture of opium.

CASE XVII.

A healthy looking young man had an ulcer of the cornea, accompanied with a good deal of inflammation and pain in the eyeball, in consequence of the suppuration of a pustule. The ulceration and inflammation subsided rapidly by the use of the vinous tincture of opium.

A few days after the eye had recovered this attack, he was suddenly seized with acute pain in it, which soon extended

* See Essay on the Morbid Anatomy of the Eye.

to the head. When I saw him, three days after its commencement, there was a distinct erosion, in two or three different places, with a good deal of muddiness of the cornea. There was also a bright redness on the white of the eye; he had intense pain in the head, accompanied with excessive languor and debility; his tongue white, and a quick hard pulse. The obscurity of the cornea instantly disappeared by the evacuation of the aqueous humour, and the pain of the head was alleviated. He was bled at the arm profusely, and the eye was fomented. On the following day all the symptoms were much relieved; and in a few days the ulcer healed, and the eye recovered perfectly, without the aid of any local applications.

Observations on the Cataract.

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OPACITY is the result of inflammation in a transparent part, as is seen in the scarf-skin, the conjunctiva, the cornea, the crystalline and vitreous humours of the eye, and their membranes. If the inflammation is arrested before it reaches the stage of effusion, the opacity, which probably depends upon the turgescence of the colourless vessels, is partial; and the part recovers its transparency when the inflammatory action ceases. This is proved by the haziness of the cornea in acute inflammation of the conjunctiva, accompanied by dimness of vision; a symptom which gradually goes off after the inflammation is subdued. When effusion has taken place even in a moderate degree, as in the nebula of the cornea, the opacity is more slowly removed, and seldom perfectly, even long after the inflammation has ceased. Where a deposition has taken place in consequence of a breach of the natural texture, as

after an ulcer of the cornea, the opacity, greater or less according to the extent of the deposition, is permanent. Inflammation is the only cause of cataract open to observation. The simplest example of it is afforded by the accidental wound of the crystalline by a penetrating instrument; in this case the opacity is partial, and the cicatrix of the wound is the centre of the opake spot. Another frequent example is the cataract following acute inflammation of the choroid and iris, whether arising spontaneously or from injury, as a violent contusion of the eye. In this case the opacity is sometimes diffused over the capsule of the lens which adheres to the contracted pupil; sometimes it is only a central spot, and the iris seems to adhere to a transparent part of the capsule.

A conformation of body favouring a determination of blood to the brain, or frequent exposure of the eye to the stimuli of heat and light in more than ordinary intensity, or the habitual vision of minute objects in a depending position of the head, by which an undue proportion of blood is thrown upon the organ, commonly induce opacity of the crystalline or of the retina; which in one species of amaurosis turns of a green yellow colour, and becomes distinctly visible.

Cataracts are very frequently of spontaneous occurrence in persons of advanced years, in whom no signs of inflammation have preceded the complaint.

Transparent parts obviously tend to become opake in age, as may be instanced by the want of clearness of complexion in old persons, and the *arcus senilis*, as it is called, which is an opacity without inflammation encroaching upon the cornea. The very minute serous vessels of the crystalline run in the cellular substance which unites the lamellæ. This interstitial texture is probably absorbed in age, and the vessels may be gradually obliterated by compression;* but this must be matter of conjecture.

* A change in the action of so minute and remote a system of vessels we should not expect to discover otherwise than by its local effects. Changes in other organs, similar to those which produce the different kinds of cataract,

Cataracts are also formed *in utero*, and I have rarely observed in the subjects of congenital cataract other marks of deranged or defective organization. Some other and more subtle cause of opacity must therefore be admitted.

The cataracts of new-born children and of aged persons exhibit very opposite appearances. In congenital cases the opacity most frequently appears in the central nucleus, the interior denser structure demonstrated in the healthy lens by Petit, and is either stationary, or enlarges equally and slowly in a circle. This nucleus is sometimes not bigger than a pin's head in the centre of the transparent lens; but more commonly it is of the size of the contracted pupil, so that the child habitually knits his brows, or screens his eyes with his hand, to obtain that state of the pupil which he finds necessary to his vision. The fluid and capsular cataracts are exceptions to this observation. It is well known that adult subjects of cataract see better in moderate than in strong light, but in a much less degree; for the opacity is in them more diffused, so as very faintly, if at all, to exhibit a nucleus; and a dilatation beyond a natural one, I mean that obtained by the belladonna, though it enlarges somewhat the field of light, seldom permits of vision. The opacity commonly appears of equal consistency from the origin of the complaint, and in its progress the light is shut out from the whole sphere of the pupil. The hard cataract affords a partial exception to this remark, in which the nucleus, though imperfectly defined, is generally to be distinguished.

The opacity is sometimes simply capsular, which is known by the uniform nebulous tenuity of the opaque membrane stretched over the transparent lens, and rendered more distinct by the dark tint reflected from the choroides. The cata-

are familiar to our ordinary experience. Thus we see the matter of secretions altered, loose interstitial texture consolidated by excess of deposition, or obliterated by absorption; changes, which, in lymphatic glands, and parts framed for less nice and delicate purposes than the organ of vision, are less obvious, although equally subversive of their functions.

ract appears to be prominent in the pupil, which is sometimes slightly irregular. In this case, which is considered to be an incipient state of the cataract, as by the consequent opacity or absorption of the lens it becomes more dense and distinct, the quantity of light admitted is considerable.

More frequently the opacity is simply lenticular, which is known by the cataract appearing more dense, voluminous, and varied in its colour and texture, and in relation to the plane of the iris, deeper seated; by the circularity of the pupil, and the greater degree of blindness in the natural state of dilatation. The motions of the pupil being regulated by the quantity of light which is admitted to the retina, its size depends upon the texture and bulk of the opaque lens, i. e. a very dense cataract keeps it dilated by excluding light from the retina; a very bulky one by mechanically distending it. In most cases of congenital cataract, and in some of mature age, the dilatation by belladonna discovers a defined margin to the opacity, and a transparent circle beyond it, and therefore adds considerably to the patient's perception of light. I have known patients in this state, who were of an age to judge for themselves, decline the operation, content with the vision they enjoyed by the use of the belladonna. In such cases, however, a tolerable vision has been previously enjoyed, owing to the smallness of the opaque nucleus compared with the transparent portion of the lens. And in all cases the vision of near objects is confused, if not totally bedimmed, by the enlargement of the pupil with the belladonna, although that of distant ones is clear and distinct. Where a transparent circumference has been discovered after dilating the pupil by the belladonna, I have never seen the capsule opaque, and I believe this black rim may be considered as diagnostic of the transparency of the capsule. Where the lenticular opacity is diffused, this sign of a transparent capsule is of course wanting.

The opacity is sometimes much deeper seated, so that you look at it through the transparent capsule and lens. It is here generally circumscribed, but irregularly shaped; and often,

from its tenuity and depth of situation, escapes the observation even of oculists. This is usually considered to be a third seat of opacity, distinct from the former, viz. in the posterior covering of the lens. I do not find, upon repeated and strict examination, any proper capsule investing the lens, i. e. which admits of being removed with it. It may be necessary to a right understanding of this structure, briefly to describe it. The tunic of the vitreous humour advances to the ciliary body, there it separates into two laminæ, which, when contiguous to the margin of the crystalline, adhere closely to each other, forming the sacculated circle (canal godronné) described by Petit, which is capable of being inflated around the margin of the lens. This canal corresponds in breadth to the breadth of the ciliary processes, and is marked by them anteriorly. The anterior lamina, which is the more dense of the two, covers the crystalline in front; the posterior lines the fossula of the vitreous humour. There is no communication betwixt the canal of Petit, the vitreous humour, and the crystalline capsule. They are all distinct from each other, and must be inflated distinctly, if perfect. The crystalline, it will appear from this description, is incased in a duplicature of the vitreous capsule. The different texture of these laminæ adapted to their respective uses, (the one properly belonging to the crystalline, and supporting the whole lens in its place; the other proper to the vitreous, and covering a very small portion of the humour, which is sufficiently supported by the crystalline itself) and likewise the close investiture of the margin of the lens, which interrupts continuity, for it prevents the passage of air, explain why they are so seldom similarly affected in disease. The posterior opacity before described is therefore seated in the proper tunic of the vitreous humour. Thus much on the situations of the opacity forming cataract.

The varieties of consistency, colour, and figure, are numerous. With regard to consistency, we have the fluid or milky, the flocculent or fleecy, the caseous or doughy, and the compact or hard cataract. The fluid lens is, I believe, rarely

contained in a transparent capsule. The latter, in my experience, has been partially opaque, presenting a dotted or mottled surface. The capsule appears in contiguity with the margin of the pupil, and as if projecting in it, and the opaque spots upon it are most distinguishable when it is viewed laterally. The second usually resembles, in appearance, flakes of snow irregularly heaped, being visibly of a loose and broken texture, and the larger masses intersected by semi-transparent lines: the arrangement is sometimes regular and uniform, being either foliated or radiated. The capsule is sometimes semi-opaque, but more frequently transparent. The third is the cataract of greatest bulk, impeding the motions of the pupil, having a heavy and dense appearance, uniformly opaque, a clouded not a fleecy whiteness, and sometimes a greenish or dirty white tinge. The fourth appears deep seated, of a brown yellow, or amber colour, most dense in the centre; if entirely opaque, flat upon the surface, over which the iris plays freely. The second and third species are most commonly met with; the first and fourth are comparatively rare.

The description of such appearances is difficult, and might appear over minute; but to an eye much accustomed they admit of ready distinction, and the distinction is of the highest importance, as the operation should be selected accordingly. To the first and second species, formerly regarded as incurable on account of their softness, the operation performed by the late Mr. Saunders is admirably adapted. To the two latter, the operation of couching or extraction is best suited.

In the description given the capsular opacity is not included; for when the capsule is completely opaque, we can hardly judge of the texture of the lens. But where the complete opacity of the capsule exists, the lens is commonly diminished in bulk; it undergoes a waste after the opacity of the capsule, so as in process of time to become a membranous cataract. This I conceive to be owing to the obliteration of the vessels of the capsule, from which those of the lens are derived. When the capsular opacity is congenital, it is either purely capsular, or

only a very small piece of lens remains. When the capsule turns opaque from injury, the lens is soon greatly reduced in bulk, as appears from the falling in or concavity of the iris which loses its support, and is demonstrated in the operation. This observation renders the operation with the needle appropriate to the cataract in which the capsule is opaque, in cases which are not very recent. When the capsule of the vitreous humour is the seat of the opacity, I have not observed that the lens undergoes any diminution, nor have I yet ascertained the remedialness of this case. The membranous or purely capsular cataract is a form of the disease which appears to me to require a somewhat different operation.

The fluid cataract commonly requires only the central aperture of the capsule; it flows out into the anterior chamber, and mixes with the aqueous humour, which, by the absorption of the opaque particles, in a few days recovers its transparency. It is to be observed, however, that this form of cataract requires to be treated with caution. I have seen two instances in which the simple discharge of the fluid was followed by severe inflammation, by which the process of absorption was arrested, as appeared from the permanently turbid state of the humour. This does not happen where the whole substance of the lens is changed. The milk-like fluid in these cases concealed a solid bed of lens, which, by the free laceration of the capsule, was set at liberty, and oppressed the iris.

The flocculent cataract readily undergoes solution in the aqueous humour when the capsule is freely opened, and its texture broken down by the needle.*

* The attempt to procure a solution of the opaque crystalline in the aqueous humour, was suggested by an accident, in which the crystalline being wounded, became opaque, and was removed by this process. I have seen many examples of the same fact. Among the miracles recorded to have been wrought at the tomb of the Abbe Paris, is the gradual restoration of sight to a young man who became blind after a puncture of the eye with an awl, which caused the discharge of the aqueous humour. (See Paley's *Evidences of Christianity*, vol. I. p. 380.) This miracle admits of a more satis-

While any portion of the capsule preserves its connection, it continues to be nourished, and of course, resists absorption; but an insulated portion of capsule is dissolved and absorbed, like any other matter extraneous to the circulation. These facts are ascertained by the aperture in the capsule remaining ever after unchanged in dimension, and if it be equal to the natural aperture of the iris, so that its broken margin cannot be seen in the pupil, it will always appear upon dilating the pupil with the belladonna. If the aperture be made of a given size and figure, as for example, the figure of a small diamond, in the centre of the capsule, it will ever after retain its figure and dimensions. But where the aperture is ultimately of the full size of the pupil, it is evident that the portion of capsule that has disappeared, must have undergone solution and absorption with the lens. The transparent capsule is tense and contractile as well as delicate in texture, so that a wound made in it is enlarged by the retraction of its sides; but the retraction without loss of substance would be very insufficient to account for the magnitude of the aperture, and we continually see that a mere puncture or cut of the transparent capsule, from accidents with pins and scissors, unites by adhesion, forming an opacity. In the opaque capsule, which has no contractility, it is still more decidedly proved, that the aperture of the size of the pupil must be produced by the laceration of the capsule in fragments, and the absorption of these fragments together with those of the lens.

The reasons why the operation of Mr. Saunders is objectionable in the two latter species of cataract are, first, the degree of force required to break down these cataracts with the needle, sufficiently to undergo a quick solution in the aqueous fluid; and secondly, the danger of dislocating the lens in the attempt. If the operation upon a cataract of firm consistence is conducted with the caution which experience dictates, the process of solution is tediously slow, and the operation must

factory explanation than has yet been offered, as the familiar case of a cataract formed by the wound, and undergoing absorption.

be repeated many times; but this is the least evil. If the operator, after having opened the capsule in the centre, acts with the same freedom as upon the soft species of cataract, the unsupported lens falls forward, or revolves and turns edge foremost in the pupil, so as to put the iris on the stretch; or it passes entire into the anterior chamber. If he succeed in dividing it, large and solid masses will press upon the iris, wedge in the pupil, or pass into the anterior chamber, and the consequences be the same in kind though less in degree. Even where the operation is confined to the aperture of the capsule, and the lens has been scarcely touched, I have known the eye destroyed by the accidental falling of the lens through the aperture and pupil into the anterior chamber; a slow inflammation of the iris ensues, which not only produces the most distressing symptoms, but admits of little, if any alleviation, until the mechanical pressure is taken off. This event, so much to be desired, is unfortunately protracted, for the process of solution is arrested by an adventitious coating of lymph, which is effused by the inflamed vessels, and invests the extraneous body. This lymph becomes partially organized, and the case terminates in obliteration of the pupil and anterior chamber, or by the sympathy of the retina with the suffering iris and choroid, in incurable amaurosis. Having more than once observed the protrusion of the lens, and the consequent inflammation of the iris to ensue, where I had studiously endeavoured to prevent it, I was led to suppose this might be owing to the previous dilatation of the pupil by belladonna, by which the lens was deprived of support. I therefore omitted the previous use of the belladonna where the cataract was substantial and firm. It was then applied to the eyebrow an hour or two after the operation, with a view of preventing the adhesion of the pupil to the capsule of the lens; but under the influence of the belladonna, I repeatedly observed, that the unsupported lens came forward, and the symptoms of pressure commenced. I therefore deferred its employment until a time sufficient had elapsed for the renewal of the aqueous humour, which, I con-

ceived, might resist the pressure of the lens. By this precaution the accident was effectually prevented, no symptom of inflammation followed, and the advantage of keeping the pupil circular was equally obtained. It may be right to observe here, that when the belladonna is used with this view, the interval of its application should be sufficient to admit of the recovery of the pupil, or it will be permanently dilated. With every precaution, however, the operation with the needle upon the full and firm cataract, is either distressingly tedious, or what is more to be objected to, destructive to the organ, and very trying to the health and spirits of the patient. In such cases I have, therefore, relinquished the operation, which was very ingeniously conceived, and for its simplicity appeared to me to deserve a full and fair trial of its merits. It is due to the projector of the operation to state, that its superiority was distinctly asserted by him only in the cases of soft and capsular cataract, as may be seen by a reference to his essay on that subject, in his posthumous work edited by Dr. Farre. At page 173 of the volume referred to, the editor observes, "In the adult, if the texture of the lens is nearly uniform and permeable, the cure is completed in a space of from three to five months; but if the texture is firmer and the nucleus large, the cure cannot be accomplished in less than seven months. On this account the author, who thought highly of extraction, and performed this operation with dexterity and success, was inclined to extract the lens when its texture was unusually hard. The editor cannot assert that he would ultimately have conceded thus much in favour of extraction. It was intended that such decision should result from a very long and impartial trial of both operations. With respect to the softer lens, or the capsular cataract, he was satisfied of the superiority of his operation."

In performing this operation for the soft cataract the operator may pass his needle through the cornea or the sclerotic. The former mode commands the advantage of giving no pain, exciting but slight inflammation, and ensures the laceration of

the transparent capsule, which is sometimes so elastic that the operator, whose eye is not well accustomed, is in danger of not opening it in the centre, or of wounding the interior surface of the cornea. This is especially to be feared in operating behind the iris, when the lens is, at the same time, much diminished by absorption, as in children; so that the capsule moves before the needle instead of resisting it. Few cases of lenticular cataract occur, to which this method is appropriate, and in which it is advisable to perform the posterior operation. There is more pain, more inflammation, more danger of displacing the lens than in the operation through the cornea. But when the capsule is opaque and the lens diminished in bulk, either spontaneously or in consequence of former operations, so as to have receded from the pupil, the posterior operation is more eligible, as the operator readily ascertains the effect of the needle upon the capsule, and directs its movements to the best advantage; while the inflammation is always moderate in proportion as the lens is small. Indeed, in the purely capsular cataract of the adult, and the half absorbed cataract of children, it is so slight as scarcely to confine the patient. When a cataract of firm consistence has undergone a partial absorption from one or more operations with the needle, and still does not readily separate into fragments, the introduction of the needle, posterior to the iris, gives the surgeon the advantage of couching it. This I have often done, to the great satisfaction of the patient, who escapes, owing to the diminished bulk of the lens, the inflammation which occasionally follows the primary operation of couching. It was my intention to point out the circumstances which should determine the election of couching or extraction in the two latter species of cataract, and to shew the value of these operations relatively to each other and to that by solution, as the deliberate result of an impartial investigation of all. This I shall make the subject of a future communication.

SELECTED REVIEWS.

Practical Observations on the Treatment of the Diseases of the Prostate Gland. Illustrated by Copper-Plates. By EDWARD HOME, Esq. F. R. S. Serjeant Surgeon to the King, and Surgeon to St. George's Hospital. 8vo. pp. 360. London, Nicol, 1811.

[From the London Medical Review, for January, 1812.]

THE frequency and importance of diseases of the urinary passages, the insufficiency of the means employed for their cure, and the unchecked course which many of them hold to a fatal termination, have rendered them at all times subjects of much interest. But it is not until comparatively recent times that any thing very material has been added to our knowledge of them, or much improvement introduced into the mode of treatment. A subject which has engaged the particular attention of such men as Hunter and Desault, cannot but have been illustrated by their researches. In this country Mr. Hunter was perhaps the first who led the way to a more scientific mode of treating many of those disorders, by his valuable observations in his Treatise on the Venereal Disease. In France the subject has been taken up by Desault, who appears to have prosecuted his inquiries with the same ardour that characterised all his labours for the improvement of surgery. Of the surgeons of the present day, there is no one to whom we are more indebted for an extension of our knowledge of diseases of the urinary passages than to the author of the work before us. Mr. Home has had the advantage of a very ample experience, and it has evidently been with him a subject of particular study.

The first part of this volume consists of a republication of a paper read before the Royal Society, and thought worthy of being published in their Transactions. It contains an ac-

count of a middle lobe of the prostate gland, "which," says Mr. Home, "I had recently discovered," and "which, from the obscurity of its situation, had hitherto escaped observation."

It has been often observed that, in the latter periods of life, the prostate gland becomes more or less enlarged, forming tumours projecting into the bladder; and that the most frequent form is that of a small rounded tumour immediately behind the opening of the urethra. Mr. Home quotes Morgagni as having noticed this tumour, and adds, "it is evident that Morgagni had no idea there was any conformation of the prostate gland that could account for this tumour, and believed that it arose from the surface of the body of the gland."

The passage from Mr. Hunter, which Mr. Home introduces, is very expressive of the appearance of the tumour. "Besides this effect of the lateral parts swelling, a very small portion of the gland, which lies behind the very beginning of the urethra, swells forward like a point as it were into the bladder, acting like a valve to the mouth of the urethra. It sometimes increases so much as to form a tumour projecting some inches into the cavity of the bladder." It is added that Mr. Hunter did not prosecute the inquiry.

Mr. Home's attention was directed to this subject more particularly, from finding this "nipple-like process" very prominent in a person who had died from the disease of this part, and a bridle, extending from the middle line of the tumour to the bulb of the urethra, where it insensibly disappeared. The *veru montanum*; somewhat wasted, was concealed in the fold forming this bridle, which appears to have drawn the bulb towards the tumour, and shortened the membranous part of the canal. Struck with this appearance, which he supposed to have been unnoticed by others, he was led to consider it with attention. In order to satisfy himself whether this tumour arose from the disease of any distinct portion of the prostate, sufficiently detached to move independently of the rest, he

thought it necessary to examine the gland accurately in its natural state.

Mr. Brodie, as usual, undertook the dissections. In the angle between the two posterior lobes of the prostate gland, lying between the two converging points of the vasa deferentia and the bladder, and adhering to the latter, he found a small rounded substance, resembling in appearance one of Cowper's glands. It could not be detached from the contiguous lateral portions of the prostate, and yet was sufficiently distinct to be considered as a separate gland. By other dissections it was proved to be a lobe of the prostate, the substance being continued from one to the other, on the side next the bladder, but rendered a separate lobe by two fissures on the opposite surface. It was found to vary much in size in different subjects, in some being scarcely distinguishable as a glandular body; in others it was larger, more defined, and evidently blended with the lateral portions of the gland. No anatomists, he adds, have pointed out this lobe, and therefore, in whatever way they have described the vasa deferentia to pass into the bladder, they have neither anticipated, nor thrown any light on the present inquiry with regard to the middle lobe; either with respect to its natural form, or the regularly rounded shape it preserves in the different stages of its enlargement.

In the plate annexed, this middle lobe is represented as very distinct, and larger than we shall generally find it. It is certainly in some cases scarcely to be made out as distinct from the firm and dense tissue which unites the lateral portions of the prostate; and, where most distinct, it is closely united with them.

There is an unnecessary degree of parade in the manner in which this discovery is announced, especially as it was very generally known by all who had examined the structure of these parts, that there was a portion of the prostate gland, which lay behind the openings of the converging vasa deferentia, and between these and the bladder. Our readers will perhaps think still less of this great discovery, on perusing the

following passage from Morgagni. "Quod si vera ulla propago prostatæ addenda est, ea certè est *subrotunda et renitens quasi glandula*, quam cum sæpe diligentissimus incisor noster in publicis dissectionibus animadvertisset *inter vesicam, et seminales capsulas, qua sese mutuo hæc jam contingunt, prominentem, et nonnunquam ad angulum quem, conveniendo, efficiunt, prostantem*, nos accurato instituto examine nihil aliud esse comperimus quam corporis ipsius prostatæ particulam, non sine aliquâ fortasse in iis qui hanc habent (neque enim omnes habent) utilitate, ut puta ad easdem capsulas a compressione distentæ vesicæ defendendas, aut alia ejuscemodi, *inter hanc atque illas protuberantem.*"*

No one from this description can doubt but that the "prostatæ propago," the "subrotunda and renitens glandula," of Morgagni, and "the small rounded substance imbedded between the vasa deferentia and the bladder," the small middle lobe of the prostate of Mr. Home, are one and the same. The figure and precise situation are well described by both, and cannot be mistaken. Morgagni thinks it is not always present; and Mr. Home, in one of the five dissections, says, that there was no apparent glandular substance, but a mass of condensed cellular membrane. Morgagni, and his "diligentissimus incisor," may in this instance be compared to Mr. Home and his indefatigable dissector. It thus appears, that what has been registered in the Philosophical Transactions as a recent discovery of Mr. Home's, was well known in the time of Morgagni, and demonstrated often in public dissections.

That Morgagni was well acquainted with the diseased enlargement of this part is no less evident. In all his dissections we find particular mention made of the prominent feature of this disease, the roundness of the tumour under different de-

* *Adversaria Anatomica*, iv. 14. And in another place, describing an enlargement of the prostate, he says, "ejusdem glandulæ subrotunda propago, in adversariis memorata, medium pariter posteriorem summumque locum tenebat."

grees of enlargement. The situation he assigns to it is precisely the same. The "*protuberantia subrotunda, mediocris uvæ acini magnitudine, intimâ tunicâ vesicæ obducta*,"* answers well to the "nipple-like projection, pushing before it the membrane of the bladder."

Another appearance also, that of a fold or bridle, extending from the nipple-formed process to the *veru montanum*, which Mr. Home supposes to have been unnoticed, is described by Morgagni.† This is not the place to multiply quotations from a book so well known, and in almost every one's hands, or it would be easy to prove that Morgagni was acquainted with the figure of the tumour, and the part of the gland from which it proceeded: that he well knew that the tumour was formed by the enlargement of the substance of the gland, and not by any excrescence of a different nature from its surface; and that he was aware of many of the phænomena of the disease during life, and of its being a disease of persons advanced in age.

We should not have noticed this part of the work so much at length, nor perhaps entered at all on the discussion of a point of so little consequence, but that Mr. Home evidently attaches much importance to his discovery, and takes exclusive merit to himself for having made it. It is more than probable that Mr. Home was unacquainted with the passage quoted above, from Morgagni's *Adversaria*. But at least it was incumbent on him to have examined the writings of this most accurate anatomist with a little more care than he appears to have done, before he asserted that Morgagni had no idea of there being any conformation of the prostate gland which could account for this tumour; and that no anatomist had anticipated himself, either with respect to the natural form of

* *Epist. Anat. Medica*, xli. 18. See also *Epist.* xli. 6, 17, 19. xlii. 24. xlv. 5 to 13, where many older authors are quoted as having described this disease: *Lieutaud Memoires de l'Academie des Sciences*, for the year 1753. and *Deschamps traité de la Taille*, Tom. i.

† *Epist. Anat. Medica*, xxxvii. 30.

the lobe, or the regularly rounded shape it preserves in the different stages of its enlargement.

The enlargement of the middle lobe being the impediment to the passage of urine, Mr. Home's observations are principally directed to it in the present inquiry. Enlargements of other parts of the gland often form an obstacle to the passage of instruments into the bladder, from the alteration they produce in the course of the urethra, but they are not regarded as immediately obstructing the passage of the urine.

In the inflammatory enlargement of the prostate in earlier life, in consequence of strictures, the middle lobe is said to be but little, if at all, affected. And as the strictures are removed, the swelling gradually subsides. In persons advanced in years, the middle lobe participates in that general enlargement of the gland which so very frequently occurs. In Mr. Home's opinion, few arrive at the age of eighty without, in some degree, experiencing it.

As the middle lobe enlarges and presses on the bladder, it brings on much irritation, and an inflammation, which contributes to the farther swelling of the gland.

"The middle lobe projects into the cavity of the bladder, in the form of a nipple, pushing the membrane before it, so as to put it still more on the stretch, in the direction from the urethra to the veru montanum. In its further increase it loses the nipple-like appearance, becoming broader from side to side, and forms a transverse fold by pushing forward the membrane, connecting it to the lateral lobes, which also become proportionally extended. As the tumour and transverse fold are situated immediately behind the orifice of the urethra, they are pushed forwards before the urine, in every attempt that is made to void it, acting like a valve, and closing up the opening, till the cavity of the bladder is very much distended; when the anterior part of the bladder being pushed forward, and the tumour being drawn back in consequence of the membrane of the posterior part of the bladder being put on the stretch, the valve is opened, so that a certain quantity of

water is allowed to escape, but the bladder is not completely emptied."

The history of the symptoms of this disease is very faithfully given, and will be at once recognized by such as have witnessed the calls to make water becoming daily more frequent and distressing, and the efforts at relief more violent, until a complete retention takes place. The symptoms, in truth, are well known; and Mr. Hunter in describing this disease, supposes them to be so, when he says, "it will be unnecessary to relate the particular symptoms which this disease occasions; they are such as arise from any stoppage of urine, producing an irritable bladder."

The quantity of urine retained gradually increases, but as the patient still continues to pass a little at every attempt, surgeons have committed the mistake of supposing the bladder to be incapable of containing more than an ounce or two of urine, and to be emptied at each effort. This is a mistake of much importance, and one which diverts the attention of the surgeon from the only effectual means of relieving the disease. It is briefly noticed by the author.

In addition to the projection of the middle lobe, the lateral portions of the gland, in the latter stages of the disease, frequently project into the bladder to a great degree, presenting a convex surface to the canal of the urethra, the course of which is materially altered. Mr. Home has in no instance observed this projection in the right lobe. The surfaces of the tumours become in some cases excoriated, and put on the appearance of being ulcerated.

The irritation of the gland in many cases produces a copious secretion of a very tenacious mucus. It is sometimes so abundant as nearly to equal in quantity the urine that is voided, and of so irritating a nature as to cause much pain in the urethra, from its passage.

As the disease continues, the internal membrane of the bladder becomes generally inflamed, and we find in the urine shreds of lymph, a white powdery sediment, and in some

cases pus, secreted by the mucous membrane of the bladder. The muscular fibres do not relax to their full extent, and when the bladder contains but a moderate quantity of urine, the most violent involuntary action is often induced. Where the obstruction is such as to allow the greater part of the urine to pass, the symptoms continue nearly the same for months; in some cases they even abate from the decreased sensibility of the bladder; and a larger quantity can be retained, without bringing on symptoms of distress.

Among the consequences of this enlargement of the prostate is the formation of a stone in the bladder, and an impediment to the exit of any which may have passed down from the kidneys. The projection of the prostate raises the sound over a small stone, so as to prevent its being felt. Such cases are, we believe, in old persons, not uncommon. Mr. Hunter mentions the case of a gentleman that had been often sounded for a stone, and yet no stone could be found: but it afterwards appeared that there was a stone, which, together with the swelling of the prostate gland, had been the cause of his death. Such cases are noticed also by others.

It appears in another part of this volume, that Mr. Home has succeeded in discovering a stone which could not be felt by the common staff, by means of an elastic gum catheter, and that he always employs it for this purpose. As it empties the bladder, it brings the stone gradually towards the instrument; and Mr. Home says, he has felt it grating against the eyes of the catheter. On the strength of this evidence he has performed the operation in a case in which two other surgeons were unable to detect the stone. The operation was successful, and the patient restored to health. Mr. Home does not say that he has ever succeeded in detecting a stone, in the complicated cases above noticed, by means of the elastic gum catheter, but we certainly consider it, when of considerable length, to be an instrument excellently adapted to this purpose, and one by means of which we may hope to succeed when others fail. Where the stone is the first formed disease,

patients have been for a time "relieved from all the symptoms, by an enlargement of this part of the prostate gland preventing the stones from falling down upon the neck of the bladder, and irritating those parts." These are the words of Mr. Hunter. The same fact is adverted to by Mr. Home.

In patients labouring under the diseased enlargement of the middle lobe, there is generally a less quantity of urine secreted than during health; and as the bladder is relieved, the secretion increases. The diminished secretion, Mr. Home supposes to proceed from the continual pressure on the mammillæ of the kidney, by the urine which is prevented from readily entering the bladder. In more violent cases, in which the patient dies from retention of urine, Mr. Home thinks it probable that the secretion is stopped altogether from the same cause. The symptoms observed in persons who die from retention of urine, certainly very much resemble those observed in persons who die from a suppression of urine, in whom no urine is found in the bladder, during the illness or after death. This makes it reasonable to conclude, that in cases of death "from complete retention in the bladder, the pressure of the urine against the mammæ stops the secretion in them; were that not the case, the bladder would be ruptured or greatly distended, which does not commonly happen. Of this fact I have had abundant experience."

We are next led to consider the mode of treatment of cases of enlargement of the middle lobe of the prostate gland. On this point Mr. Home's observations are very valuable. They are made by a person familiar with the symptoms of the disease, and accurately acquainted with its nature. And the very rational mode of treatment which he recommends, and the success which appears to have attended it, are at once proofs of his judgment and of his skill. Although other surgeons may have been acquainted with the disease, and the means of relieving it, Mr. Home is the first who has well explained and insisted on the plan of regularly emptying the bladder in order to remove it. It is true that Desault, in similar cases, strongly

recommends the use of the elastic gum catheter, which he leaves in the bladder for a very considerable time, advising the occasional use of it, even after the cure appears to be complete. But he does not appear to us to have possessed such accurate notions of this diseased enlargement as Mr. Home, though his practice may have been equally successful.

The diseased enlargement of this lobe, when arrived at a great size, is allowed by every one to have gone too far to admit of a cure; and it is very generally believed, that the disease is equally desperate in all its stages. One object of the present work is to do away this prejudice, and to show that, if attended to in proper time, the enlargement may, in many instances, be reduced, in others prevented from increasing, and, even in less favourable cases, rendered so much slower in its progress, that the patient's life is prolonged, and his sufferings mitigated in a very great degree.

In the earlier stages he recommends bleeding from the loins, opiate clysters, Dover's powder, the tepid hip bath; and, with these, general quietness and abstinence. On no account should bougies, or catheters be introduced, especially of the metallic kind; they add to the irritation and increase the swelling. The symptoms in this stage are often supposed to arise from stricture, and bougies are employed to relieve them. It is true, that from the irritation we may find a spasmodic stricture. But if the patient is old, and has not had strictures in earlier life, we may be sure, says the author, that none exist now. If the frequency of making water increases, and the efforts become more violent, and if at the same time there is any fulness, or tension of the bladder, a catheter should be introduced.

In passing the catheter in these cases, we are directed to keep three objects in view; to avoid bringing on a spasm in the urethra; to conduct the point over the prominence at the neck of the bladder; and to employ an instrument which may be safely left in the bladder. The only instrument possessing the necessary qualities to fulfil these objects, is the elastic gum catheter. Mr. Home considers the introducing into general

practice the use of a curved elastic gum catheter, as a point of very great importance. In order to give them the proper curvature, he always keeps them on a curved iron stilet, with the curve continued to the point, and more bent than the silver catheters generally are. In some cases a catheter with a stilet cannot be passed from spasm, and yet, without a stilet, if it has not a permanent curvature, it cannot be made to mount over the obstruction at the entrance into the bladder. When the surgeon has not elastic catheters with a permanent curve, he is advised to employ one with a leaden stilet, which will give support sufficient to get over the obstructions, and which may be removed when the instrument is in the bladder, with less injury to the prostate and parts around.

When a curved gum catheter cannot be passed, either with or without a leaden stilet, we should employ one of iron; and in order to give a still greater curvature, withdraw it a little as the point of the catheter arrives at the neck of the bladder. There are some cases where a metallic catheter will pass more readily than any other, but in general, a flexible one should be employed, if possible, to prevent injury of the projecting tumour of the prostate.

“The catheter should be introduced either towards the right or left side, with the handle nearly in a horizontal line, and when it reaches the membranous part of the urethra, the handle should be gradually and gently brought towards the perpendicular line, the point all the time being kept in motion; and when it is nearly upright, the handle should be depressed. Where the flexible catheter has no stilet, a good deal of dexterity is often required. The great advantage of passing the instrument in a lateral direction, is, that the point is by that means guided into the space between the lateral and middle lobe of the prostate, where there is a groove along which it may be directed between these two projecting parts into the cavity of the bladder.” Where the point gets entangled in the membranous fold between the two lobes “there will be an advantage in partly withdrawing the instrument, and trying to

introduce it on the opposite side, where the same thing may not occur."

If there is much difficulty met with in passing the instrument, Mr. Home gives many reasons for leaving it in the bladder; he generally withdraws it every three or four days. In the temporary paralysis of the bladder which sometimes follows, he advises the urine to be drawn off at very short intervals.

Enough has been said to show, that the author's directions, with respect to the choice of the catheter and mode of introducing it, are of much value. They come from one who has had on this subject a most extensive experience; and if not wholly new, are scarcely less valuable on that account, as they confirm many observations made by other practical writers. Mr. Home has the reputation of having succeeded where others have failed; and it is evident that he supposes himself to possess "the nicety and lightness of hand so necessary for passing the catheter." "An eminent engraver, on whom I passed a catheter, after unsuccessful attempts had been made by others, told me that he saw by the light mode of handling the instrument, that I was master of it."

In cases of retention from enlargement of the middle lobe, the object is to disturb it as little as possible, till the inflammation and swelling have subsided, and there is a free passage for the urine. The most effectual means of cure is to evacuate the urine regularly, by means of the catheter. When this practice is well followed up, Mr. Home says, that the swelling in very many instances has subsided, and the power of evacuating the bladder has been restored. The time in which a cure has been obtained varies, according to his account, from days to years. In people much advanced in years, a cure is not to be expected; but, by regularly passing a catheter, the disease has been kept stationary, so as not to be the cause of death, and not to be attended with pain or distress. No other means are of any great service. Mr. Home does not look on this tumour as a new formation, but only an increase of a na-

tural part, such as an enlarged tonsil; and often, by removing the inflammation, it subsides.

Persons who have had strictures from their youth remaining uncured, are more liable to this enlargement than others. The symptoms are nearly the same as when no stricture is present. In such cases the bougie must not be passed far beyond the strictures. When the canal is large enough, a catheter is to be introduced, and the urine regularly drawn off. Mr. Home has never been able to accomplish a complete cure of the stricture, the contraction returning on the recurrence of any irritation at the neck of the bladder. The caustic bougie seldom can be employed with any advantage.

The lateral lobes of the prostate are liable also to independent enlargements. Mr. Home gives two instances where the left lateral lobe was enlarged and pressed on the rectum. The symptoms were such as arise from an impediment to the free passage of the fæces, and were referred to the rectum itself. There appeared to be no increased sensibility of the gland. The object is to relieve the part from pressure, as in the cure of the enlargement of the middle lobe. Mr. Home employs clysters of warm water, suppositories of hemlock, with or without opium, and the tepid hip bath.

An inflammation of the *veru montanum* is, according to Mr. Home, no uncommon disease. It produces most distressing sensations. The disease generally continues for years. Slight cases have got well, but generally the parts do not recover. It has been frequently mistaken for stricture. This is an important error, as bougies are said always to aggravate the disease, and in many instances to cause it. Many of our readers will here probably recollect the admonitions delivered by Mr. Abernethy, in his truly valuable *Observations on Diseases of the Urethra*; when, in speaking of diseases of the prostatic part of the canal, he cautions "the younger part of the profession to beware, in their attempts to cure strictures, that they do not irritate nor injure the last inch of that canal, where there are no strictures, but in which considerable dis-

order may nevertheless exist." Mr. Home says that he has found no remedies of much permanent use. The patients are relieved by keeping the horizontal posture. He endeavours to quiet their apprehensions as to its being a disease of any danger; and in some cases it has gradually but very slowly subsided.

The other diseases of the prostate noticed in this volume are abscess and ulcers in it, and the deposition of gravel in its substance. The observations on them contain nothing of particular interest. As the best distinguishing mark of disease and ulceration of the prostate, Mr. Home mentions the continued discharge of a glary tenacious mucus. The best mode of treating it is to prevent the urine from coming upon the surface of the ulcer, by keeping a catheter in the bladder.

Mr. Home relates, in the course of the work, a case of irritable bladder, in which various injections into the bladder were employed, but without ultimate relief. Oil appears for a time to have had the effect of calming the spasmodic action which generally followed drawing off the urine. Opium dissolved in water afforded also a little relief.

One of the most important parts of this volume consists of a series of engravings, thirteen in number, twelve of them representing the changes which the middle lobe of the prostate undergoes in the different stages of its enlargement. They convey very correct notions of the figure of the tumour, and the changes it produces in the course of the urethra. They are all supposed to be taken from the front, and exhibit the parts as undisturbed by the knife. We think two or three views of vertical sections of the tumours in their different stages, including a small portion of the urethra, would have added to their utility, as pointing out still more clearly the part of the prostate which enlarges, the exact nature of the obstruction which it causes, and the altered course of the passage in the vertical direction. They are rendered still more valuable by a copious and connected explanation of the whole from Mr. Home, and by many of the cases being narrated in the preced-

ing part of the work. In this great city, all who are desirous may have access to excellent museums, and have every facility of examining diseased appearances. To these, drawings are of minor importance. But we cannot too strongly praise the plan of illustrating diseases, attended with evident morbid structure, by a well selected series of plates, as it is extending in some degree the advantages of a museum to many who have neither the means nor the opportunity of personal inspection. They so much simplify and elucidate verbal histories, and leave an impression so much stronger than the best written description, without such accompaniments, can do, that we do not hesitate to rank them as means of very great utility in promoting a more general and a more accurate knowledge of disease.

The rest of the work is occupied by voluminous tables of the quantity of water drawn off from two patients who laboured for a considerable time under a disease of the prostate gland. "They are intended to show the irregularity of the secretion of the kidneys, in what may be considered as a state of health respecting these organs." The latter point may, we think, well be doubted.

Most of the observations in this work are founded on experience; and are confirmed and illustrated by cases and dissections. These we regard as a very valuable part of the volume, as conveying much useful information, and entering into many details which could not be so well delivered in general precepts. And it may be said, that in most instances in which we have general histories of diseases followed by the relation of cases, that it is from the latter the truly attentive reader derives the most accurate and therefore the most useful knowledge. This, we think, will be admitted by those who have sought to obtain a more intimate acquaintance with the distinguishing symptoms of diseases, by comparing written accounts with what they observe during their actual occurrence.

There is an air of importance and authority in Mr. Home's

style of writing, which must always be displeasing to such as value a book more for the matter it contains, than for the name of the author who composed it. This spirit is to be traced in some parts of the present work: but it appears to arise from a consciousness of his knowledge of his subject, a knowledge which in this instance we believe he eminently possesses. We submit to it therefore with far different feelings from those we have experienced in examining some of his physiological speculations.

Surgical Observations on Tumours, and on Lumbar Abscesses,
By JOHN ABERNETHY, F. R. S. &c. pp. 222. London,
1811.

[From the London Medical Review, for October 1811.]

THE word, tumour, Mr. Abernethy confines to such swellings as arise from some new production which made no part of the original composition of the body; and by this definition he excludes from his arrangement the majority of those diseases which nosologists have placed under this title. Tumour has generally been understood to designate any preternatural enlargement discoverable in any part of the body, and it has therefore included those growths of bones, joints, glands, &c. which would otherwise find no station in nosology, although they may justly be considered as morbid affections. Mr. Abernethy's definition cannot therefore be said to comprize the whole class, but merely a particular order, of which he has pointed out the species and varieties. Indeed it is not a little curious to observe the different significations in which modern writers have employed this word tumour. Mr. John Bell defines a tumour to be, "a mere accretion of nutritious particles in skin, bone, gland, or muscle, according to the nature of the part;"* whilst Mr. Abernethy applies that term exclu-

* Bell's Principles of Surgery, Vol. 3. p. 18.

sively to diseases of an opposite origin, namely, to such growths as formed no part in the original composition of the body.

We are obliged also to dissent from the doctrine which Mr. Abernethy has espoused, as illustrating the formation of morbid growths. Mr. Hunter found a clot of blood adhering to the surface of the peritoneum, by a slender neck half an inch in length; and Mr. Abernethy having met with a pendulous fatty tumour growing from the same membrane, concludes that it originated from a similar extravasation. The vessels are supposed to have shot through the narrow neck, and organized the clot of blood, which thus becomes a living part and increases to an indefinite magnitude. Now, however imperfect our evidence may be, to prove that extravasated blood never becomes the matrix of vessels, we must assert, that we do not know a single circumstance which substantiates the opposite opinion. If extravasated blood ever becomes the matrix of vessels, we should not expect to find it so universally and completely absorbed in the cavities of aneurismal sacs, and in extravasations in general; but should rather expect that such depositions would become living parts, and grow to indefinite magnitudes; whilst the vessels that shot into them would determine the nature and progress of the organization which had thus become established. But the fact is, that effusions of coagulated blood, instead of becoming organized, produce the same effects in the animal body as foreign substances in general. If in moderate quantity, they are generally and speedily absorbed, but if to a greater extent, or diffused amongst the surrounding parts, a degree of irritation is excited which terminates in suppuration, and the extravasated fluid is thus discharged. Besides, the common means of detecting organization, discover no vascularity in these depositions, even in their most concentrated state, and when they may be supposed to have existed a considerable time, and in contact with living parts. It is impossible to inject the firm and fleshy coagula of an aneurismal sac, and if an amputated limb be

minutely injected, it will be impossible to detect organization in the plug which extends from the end of the vessel, whilst the lymph effused from the edges cut by the ligature will be red and highly vascular. If the time then have been sufficient for the propagation of vessels in the effused lymph, we think it but fair to conclude that the same changes would have taken place in the plug of coagulum had it admitted of them; and the rapidity and uniformity of the absorption of this plug furnish to our minds some evidence in favour of its non-vascularity.

Neither physiology nor animal chemistry have yet pointed out the difference between that lymph of fibrine which is deposited by extravasated blood, and that effusion which takes place from wounded or ulcerated surfaces. The peculiar organization and changes which are however indispensably requisite for the production of the latter, would indicate that it is widely different from that deposition which is the result of simple extravasation. The constancy and rapidity with which vessels are propagated into the lymph which is secreted during inflammation, are evinced both in the union of divided parts and the formation of granulations; whilst extravasated coagulum not only interrupts these salutary processes, but even will exist for a great length of time without affording the least evidence of vascularity. It is that lymph, therefore, which is secreted during inflammatory action, that appears to us to form the sole matrix of vessels, and if we can but imagine it effused into the cells and cavities of the body, we shall at once arrive at the origin of morbid growths. The structures from which the vessels are propagated determine the organization of the lymph, and the tumour generally partakes of the structure of the parts from whence the vessels originate: thus, in the adipose membrane fatty tumours are formed; in the neighbourhood of bones, osseous ones; of joints, cartilaginous ones, &c.

If we consider the healthy structure of the parts in which tumours arise, we shall be able to account for many circum-

stances in their formation; for morbid growths cannot but be regarded as accumulations of natural structure modified by peculiar actions. Tumours which form in glands approximate to the structure of those organs, being generally firm, solid, and highly vascular; whilst those that originate in the cellular membrane are frequently cystic and divided by septa. It appears to us, that an examination of the different tissues in which tumours grow, will better explain the formation of cysts, than any arguments which can be deduced from the effects of pressure, since there are often tumours of immense size and great weight which are involved in no cyst. Many also of inconsiderable size are contained in strong coats, which appear to us to have their origin from the peculiar structure in which the nucleus of the tumour was deposited.

The prolixity of these observations will be forgiven by those who attach any importance to the medical treatment of these diseases. We have seen that their origin is in an inflammatory action, producing an effusion of lymph; and hence their treatment must consist in obviating this increased action, and subsequently exciting the absorption of the matter already deposited. The diminution of arterial action, by the abstraction of blood and heat, will be found best calculated for the fulfilment of the former object, and the latter is to be effected by the use of stimulants and counter-irritants. The *timing* of these, however, is a matter of considerable difficulty and of the utmost importance; for, if employed before the inflammatory action has fully subsided, they will increase rather than diminish the accumulation. "Both reason and experience equally demonstrate the impropriety of using the stimulating plan, till the disease is first tranquillized and in a degree subdued. It is reasonable to expect the stimulating measures will increase the actions, which are going on in the diseased part; and experience proves that diseases are often increased by those very means which, had they been employed at a proper time, might have effected their cure."

That class of tumours which consists of substances of new

formation, which made no part in the original structure of the body, is divided by Mr. Abernethy into two orders; *first*, sarcomatous tumours, or those which have a firm and fleshy feel; and *secondly*, encysted tumours, or those which consist merely of a cyst or capsule with a fluid deposited in it.

The first order is subdivided into numerous species. The first is termed common vascular or organized sarcoma, and is composed of lymph, rendered more or less vascular by the growth of vessels through it. This appears to be the most simple form of tumour, and is only dangerous from its growth and size, when, inflammation being the effect of the distention and pressure and the tumour possessing but slight powers to sustain disease, it sloughs and falls out. The second species is the adipose sarcoma, which consists of a fatty or lardaceous substance, contained in a thin but distinct capsule; it generally forms in the midst of cellular or adipose substance, and is often lobulated in its appearance. These tumours have appeared to us to consist of fat deposited in a cellular structure, probably the common reticular membrane, which naturally contains a serous fluid. The whole is then contained in a slender cyst, which does not appear to partake of the diseased action, for if the included substance be removed the cyst will adhere and so swell. They are very loosely connected with their capsules, and hence their removal is easily effected, since the latter do not regenerate the disease. The third species is denominated pancreatic, from its resemblance to the structure of the pancreas. It occurs generally in the neighbourhood of salivary glands, or such as are of a similar structure. It is of slow formation and generally very indolent in its nature; at other times, however, it will excite pain and inflammation, which confound it with schirrus.

Cystic sarcoma is the fourth species; it consists of a number of cysts containing a serous fluid, and resembles the section of a healthy ovary in appearance: it generally forms in the ovary and testicle, and in the latter often contains a caseous matter. Mammary sarcoma, the fifth species, is white,

firm, and homogeneous in its appearance, like the gland from whence it is named; it possesses no cyst, extends considerably into the surrounding parts, and appears very intractable in its nature. The sixth species, the tuberculated sarcoma, is very horrible in its progress and effects; "it consists of an aggregation of small firm tubercles of different sizes and colours, connected by a kind of cellular substance; the size of the tubercles is from that of a pea to that of a horse bean, or sometimes larger; the colour of a brownish red, and some are of a yellowish tint." The primary tumour generally forms in the neighbourhood of lymphatic glands, but innumerable smaller ones afterwards grow on the surface of the skin and are extremely hard and painful. At length a foul ulceration supervenes, very similar to the cancerous, with thick inverted edges and an ichorous discharge. The tumours in some parts are confluent, and here ulceration generally commences. We have recently met with them, not only on the surface of the body, but also in the liver and on the peritoneum, in the same subject; it is extremely malignant and destructive.

The sarcoma next described, the seventh species, has been by some called the soft cancer, and by others it has been included in the comprehensive name, fungus hæmatodes. It differs, however, in many respects from cancer, and we conceive can only be regarded as one of the varieties of fungus hæmatodes. The chief characteristic of the disease is its anatomical structure, which very nearly resembles that of the brain. The primary tumour has generally its situation near the surface of the body, and very frequently in the testicle, and glands about the neck and head. The disease spreads in all directions, and the glands secondarily affected, are generally converted into a structure resembling the primary tumour, but of a much softer consistence and apparently less vascular. They often contain a creamy fluid, which is deposited in a flocculent tissue resembling, after maceration, an unravelled testicle. The primary tumour will frequently ulcerate and throw forth a bleeding fungus, but we have never met with this

result in the secondary appearance of the disease, in which the skin generally ulcerates from distention, the tumour sloughs and is discharged. It appears to be propagated in a peculiar manner and independent of absorption; for we meet with the secondary tumour in a part which has no possible connection by absorbents with the one primarily affected. Thus we have known the eye the seat of the primary disease and the lungs secondarily affected; the testicle is its most frequent seat, and the liver will exhibit the next scene of its ravages. The parts secondarily affected differ very much in appearance from the primary tumour; the latter is often much firmer in consistence, and will contain cysts or cavities filled with a glutinous fluid, whilst the former are converted into a medullary substance, in many parts of a consistence not much thicker than cream. Thus, like cancer, the glands secondarily affected do not always possess the characters of the primary tumour. On a former occasion we mentioned those circumstances in which it differs from cancer,* and endeavoured to point out those dissimilarities which exist between it and other diseases which have been confounded with it under the term fungus hæmatodes. This name has been applied to an immense variety of diseases, which agree in a few leading points, and it appears as if the subject was likely only to be cleared by detaching the more conspicuous varieties, and marking their peculiar characters. For this reason we should prefer calling the present, medullary sarcoma to fungus hæmatodes, since the former appellation very accurately expresses the common appearance of the tumour.

Mr. Abernethy's account of carcinoma, the last species in his arrangement, is the most valuable part of the essay, containing the most succinct yet comprehensive history of the disease we possess. Indeed the essay seems to have been undertaken with a view to establish the characters of this disease, by separating from it a few which agree with it only in

* London Medical Review, Vol. iii. p. 109.

external appearances, and others, which although equally destructive and intractable, are nevertheless perfectly different, and require to be discriminated before any progress can be made in this difficult part of medical science. Some of these, being less destructive than cancer, do not require the same active remedies, which renders a knowledge of the characteristic signs of the latter the more important, that we may know it at an early period, and when the disease is in a small compass, and the operation on that account less formidable. We would gladly transcribe his history of carcinoma, but we are compelled to pass on to his instructive description of the schirrous structure:—

“It is difficult to convey correct ideas of the structure of carcinoma by words or even by drawings. In the generality of instances the diseased part is peculiarly hard, and there are intermixed with it, firm, whitish bands. There is indeed no other striking circumstance which can be mentioned as constantly claiming attention in the structure of this disease. These firm whitish bands sometimes extend in all directions from the middle towards the circumference of a carcinomatous tumour, like rays from a centre, having little intervening matter; sometimes they intersect it irregularly, having interposed between them a firm brownish substance, which may be scraped out with the finger. Sometimes they form cells, containing a pulpy matter of various colours and consistence; and sometimes these bands assume an arborescent arrangement, ramifying through the diseased substance.”

We lament that no writer has attempted to analyze the peculiar schirrous structure; we mean, endeavoured to determine to which of the natural tissues that compose animal bodies it is peculiar, for we believe that the different organic alterations are referable to certain structures. The few continental writers who have attempted such investigations, have decided that cancer occurs in such a variety of organs, so different both in function and structure, that it is peculiar to none but involves the whole. There are however, peculiar tissues which

enter into the composition of all organs, such as vessels, nerves, cellular membrane, &c.; and the circumstance of this disease affecting all organs would seem to us to prove that it belongs to one of those structures which contribute to the formation of every part. If we were to hazard a conjecture on the subject, we should fancy it appropriate to that fibrous tissue which composes the cellular membrane, and that from the following circumstances. The appearance and disposition of those membranous bands, which are considered as the criterion of schirrous structure, are very similar to that of the fibrous tissue which composes the cellular membrane. They are firm, and white, and fibrous, divided by septa or forming distinct cells, having generally fat deposited in the interspaces. The appearance of a section of a schirrous tumour may not inaptly be compared to that of a lemon, the membranous bands gradually diverging like rays from a centre, until they are lost in the surrounding cellular substance. Again, schirrus generally commences in parts abounding in cellular membrane, as the surface of the body, and in glands, into the composition of which much of this substance enters. Thus we find it in the mammary gland, and those of a conglomerate structure in general, whilst it is not known in others of a more compact or conglobate form. It is never met with in the kidneys, very rarely in the testicle, and we doubt if ever true schirrus be found in the liver, for that morbid alteration which has been so denominated, differs very essentially from the characters of schirrus in other organs. When the disease attacks membranous or muscular parts, it commences in the cellular membrane that connects them. Thus the schirrous pylorus commences between the peritoneum and muscular coat, and the bands are seen to extend along the cellular membrane that connects the muscular fibres. If schirrus were an entirely new formation, we should expect that it would be contained in some cyst, since that is the case with most of the sarcomata; whereas schirrus is diffused and scattered into the surrounding parts; and lastly, the universality of cellular membrane will account

for the propagation of the disease in every organ, and the failure of most operations performed for its removal.

The present edition contains the result of Mr. Abernethy's experience in the palliative treatment of cancer. It is entirely of a dietetic nature, and refers to the influence which the state of the alimentary system has upon diseases in general.

"There can be no subject which I think more likely to influence the mind of a surgeon, than that of an endeavour to amend and alter the state of a cancerous constitution. The best timed and well conducted operation brings with it nothing but disgrace, if the diseased propensities of the constitution are active and powerful. It is after an operation that, in my opinion, we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance. In addition to that attention to tranquillize and invigorate the nervous system, and keep the digestive organs in as healthy a state as possible, which I have recommended in the first volume, I believe general experience sanctions the recommendation of a mere vegetable, because less stimulating diet, with the addition of so much milk, broth, and eggs, as seem necessary to prevent any declension in a patient's strength."

The remarks on encysted tumours, although not so full or systematically arranged as those on sarcomatous growths, contain many hints of much practical importance. These tumours consist of unorganized matter of various appearances and consistence, secreted by the internal surfaces of cysts of different textures and properties. The cysts, of course, are to be considered as the parts in which the diseased actions reside, and on that account claim our principal attention. It is an object in all tumours to know how far the cyst or capsule partakes of the diseased action, since this knowledge will determine how far its removal is necessary, and would very much facilitate the performance of operations. In many of the sarcomata the cyst appears to be merely an adventitious growth and independent of the morbid actions, for in the adipose

sarcoma, if the contents of the sac be removed, the latter will adhere and not regenerate the disease. But in encysted tumours the cyst may be regarded as the nidus of the diseased actions, and hence its removal is indispensable in the cure. Mr. Abernethy has related some cases which fully prove the truth of these remarks.

There are two other circumstances which claim our attention with regard to encysted tumours. The slightest irritation in them will produce the utmost constitutional derangement, and will often prove fatal. This will not appear very surprising, if we consider the immense surface contained in many of these cysts, and how much the constitution must sympathize with such an extent of inflammation. It teaches us also the danger of irritating wens, either of an irritable nature or occurring in irritable habits. Cysts of this nature, when exposed, are very liable to generate a fungus of so intractable a nature, that it furnishes an additional argument for the complete removal of the disease. Mr. Abernethy has related an instance of this kind, which seems very much allied to some of those cases, termed by Mr. Hey, fungus hæmatodes. He has also appended a history, which proves most strikingly the similarity of these cases with that disease which our author has denominated fungus of the brain, and corroborates very fully an opinion, which we formerly expressed, of the origin of such diseases in the rupture of minute blood-vessels.

“A young man, who was out of health, and complained of stiffness and pain in the bottom of his belly, took to his bed, declaring his inability to move about. Suddenly a swelling formed above Poupart's ligament, which rapidly increased and the skin ulcerated. A frightful fungus seemed to present itself, an uncontrollable hæmorrhage ensued. When the case was examined after death, all that bulged out could be removed by the finger or sponge, and appeared to be coagulated blood rather than fungus; and at the bottom nothing was seen but the abdominal muscles, which had that bruised or brownish appearance which Mr. Hey has described.”

Few diseases have been considered more desperate than lumbar abscesses; and their remote situation, and an idea that they are universally connected with a carious state of the vertebrae, has hitherto preserved them from the interference of surgery. Mr. Abernethy's practice and observations have, however, convinced us, that they ought not to be placed on the list of incurables, and prove how far scientific investigation is capable of disarming the most formidable diseases. Lumbar abscesses are generally complicated with a carious state of the vertebrae, and the practice of Mr. Pott successfully proved, how far counter-irritation is capable of arresting this ulcerative process. Chronic abscesses are not in their nature dangerous, whether connected with diseased bones or otherwise; but become so from their magnitude, and the effects which, from this circumstance, they produce on the constitution; whence we clearly see, that the objects of surgery ought to be to prevent their increase or reduce their dimensions. In general they proceed in one tenor from bad to worse, till at length the swelling bursts, fever ensues, the patient becomes hectic and dies. The magnitude of the tumour is the cause of its bursting, and hence, in the cure of all chronic abscesses, the indications are to prevent their increase, and subsequently to promote their dispersion. Counter-irritation and an attention to the general health will often effect this, and leave the cure of the diseased bones a work of subsequent importance.

But the abscess will sometimes continue to increase, the integuments become irritated from distension, and the swelling is proceeding to burst. The question then is, whether we should allow it to open spontaneously or treat it like phlegmonous abscesses. If inflammation supervene and it burst spontaneously, or a permanent opening be made into it, the most horrible effects supervene. A violent degree of irritation takes place in the sac; the constitution sympathizes with such an extensive inflammation; the patient is feverish and generally hectic. This constitutional derangement has generally been imputed to the admission of air into the cavity of the abscess,

or the absorption of pus from it. Neither of these explanations however, appear probable; for the contact of air in an emphysematous state of the cellular membrane, or when blown into the cavities, does not cause inflammation, nor does it on ulcers in a state of disease; nor does the absorption of pus from the surfaces of ulcers and abscesses produce any constitutional derangement. The inflammation seems to be propagated from the opening throughout the immense surface of the cyst, and the constitutional derangement and fever are sympathetic with this great extent of irritation. The object therefore is to evacuate the abscess in such a manner as shall not excite inflammation. This Mr. Abernethy effects by a small puncture through a sound part of the integuments, and immediately closing the wound by the adhesive inflammation. Inflammation rarely follows this operation; the sac contracts and the subsequent collection is evacuated before the distention has brought the cyst to its former magnitude; and by a repetition of this process it is reduced to an extent which allows no dread of inflammation from a permanent opening. This practice is applicable to chronic abscesses in all situations where the extent of the cyst would lead us to dread the effects of its inflammation.

It is this treatment, which Mr. Abernethy ventured to recommend in cases of spina bifida, and which Mr. Okes so prematurely reprobated. Unfortunately for Mr. Okes, at the very time he was writing his book, and in his closet had so decidedly determined the impossibility of the practice, Mr. Astley Cooper, in his great field of experience, had actually proved its excellence in many instances. This gentleman has already committed to the press the accounts of several cases in which this treatment has completely succeeded; and the death of the patient from another cause, in one instance, enabled him to determine that contractability of the membrane, which Mr. Okes had denied. These cases furnish a most complete refutation of Mr. Okes's speculations, and prove how

little dependance should be placed on reasoning which is not deduced from absolute experiment.

The volume before us concludes the series of Mr. Abernethy's observations; constituting, in our opinion, the most valuable addition which has been made to surgery since the time of Mr. Hunter. Our author has pointed out a new source of local diseases; he has discriminated the innumerable affections which emulate the appearance of syphilis; he has boldly advanced the operation of aneurism to an extent, the possibility of which has been denied by many experienced surgeons; and in the present volume he has commenced the cultivation of an immense tract of disease which hitherto knew but one history and one treatment. His book is a simple narration of most important facts, and his deductions from them may be regarded as axioms in the practice of surgery. The progress which his doctrines are daily making is the best earnest of their importance, and the success of his operations is the best answer to those who have denied their possibility. If we have ventured in a few instances to dissent from him, we have only availed ourselves of his readiness "to encounter these risks, when we had it in view to bring a difficult and interesting subject fairly before the public." We are confident that Mr. Abernethy would prefer a free investigation of his opinions, to an obsequious vassalage to his authority. "To exert reason is not to revolt against authority; reason and authority do not move on the same parallel."

ORIGINAL PAPER.

Copy of a Letter from BENJAMIN SILLIMAN, Professor of Chemistry at Yale College, to DAVID MELVILLE, Patentee of the Improved Gas Apparatus.

New Haven, August 18th, 1814.

Mr. David Melville,

SIR,

Your favour of the 8th instant is before me, and I beg you to accept my thanks for the enclosed engraving of your apparatus for the gas lights. The print is very handsome, and does good justice to your apparatus. When you were so obliging as to show it to me, during my visit at Newport, last summer, I was agreeably surprised to see an apparatus so perfect, contrived and constructed in this country, where the subject of the gas lights is less generally understood than in Europe. I think your apparatus simple and effectual, and well adapted to the purposes of manufacturing establishments, and the flames which you shewed me were brilliant, and burned without smoke or smell.

Nothing, but a general knowledge of the gas lights, is necessary to introduce them into the large manufacturing establishments, which are now becoming so numerous in our country. They have the strongest recommendation which can address itself to practical men; viz. *economy*. Those who feel particularly interested to know the details of the subject, may find all the information which they can reasonably desire, in very elaborate and minute reports, drawn up from actual experiments, made on a very great scale, in one of the largest manufactories in England, by Mr. Murdock; and in various papers, by Mr. Cook, and others, for which reference may be had to Nicholson's Journal, and other periodical works on science and the arts. It will be found, by referring to these, and other similar sources of information, that the saving pro-

duced by the gas lights as a substitute for oil and tallow, is very great, and in large establishments amounts to a heavy sum. It is probable that circumstances in this country might produce some variation in the result, the degree of which experiment alone can determine. The gas lights are probably less adapted to private families than to public establishments, because, the care and skill which are requisite, are more than can be reasonably expected among common domestics. But, in large manufactories, the business of preparing the gas and of attending on the lights, will of course be assigned to a particular person, who, with a common share of ingenuity, will soon acquire the habit of doing this, as he would any other thing.

Economy is not all which recommends the gas lights; for, were they ever so cheap, if they did not, in a good degree, answer the desired purpose of affording a good light, no one would adopt them. The light from the combustion of the gas from fossil coal, when the coal is of a good quality, is remarkably brilliant and beautiful. I saw a large apothecary's shop in London, lighted with the gas from coal, and as the thing was then (1805) by no means so common in London, as at present, it drew a great concourse of people, every night, around the shop, and thus brought it into general notice. The proprietor of the shop was so civil as to shew me his apparatus, which was arranged in a cellar, beneath the roots in which the lights were exhibited; and although the apparatus was a good one, I think it was inferior in several respects to yours. There was, however, one circumstance which struck me as particularly judicious, although I cannot say how generally it is adopted in other establishments of this kind; I allude to the placing of quick lime in the water of the apparatus intended to wash the gas; as the carbonic acid gas is the most troublesome foreign body which is commonly found mixed with the inflammable gas, the lime performs an important service, by removing it more rapidly than the water alone would do, or after it is saturated with it. I have tried many experiments on

different substances, for the purpose of obtaining inflammable gases, to afford light by their combustion. Some sorts of coal give only a poor gas, burning with a pale blue light, and with only a feeble illumination; while from other kinds of coal, the gas gives a rich brilliant light, hardly surpassed by any thing. I believe the Cannel coal is generally used in Great Britain; I have found some specimens of the Richmond coal (Virginia) answer very well; but, few substances which I have tried, afford a richer gas than walnut meats (as they are commonly called), and even the whole of the walnut (shell and all) answers very well, and a quart of walnuts will afford a barrel of gas. Walnuts are too dear in the maritime parts of New England to be substituted for coal, but the hint might be of advantage in some parts of this country, where walnuts abound, and coal is dear. The light from the inflammable gases, when of a good quality, is remarkably steady and uniform; as there is no wick, no snuffing is necessary; and workmen, in manufactories lighted in this manner, are not interrupted as they commonly are in trimming their lamps or snuffing their candles; the light does not become dim occasionally, as that from lamps and candles does; nothing falls from the light, or can possibly fly from it to kindle cotton, linen, or other combustible substances, which abound in many manufactories; and, as the gas light is necessarily confined to the spot where it is used, and as any particular light can be instantly extinguished by simply turning the key of a stop-cock connected with that particular tube, or the whole can be put out by turning the key of the main tube, the security against fire becomes as complete as the nature of combustion will probably ever permit.

It is a circumstance also of no small importance, that a workman may regulate the quantity of light which he wishes, by properly adjusting the key of the stop-cock; if the workman wishes to go away for a time, and still does not choose to extinguish his light, he may, by cautiously closing the key of the stop-cock, reduce the flame to a mere point, which like a little

brilliant star, rests on the orifice of the tube, and will remain so for hours, with scarcely a perceptible consumption of gas; and when the key is again turned back, the light blazes out anew, with its former brilliancy.

Much more might be written on this subject, upon which, sir, you have requested my opinion, but perhaps it is not necessary. If apparatus, materials, and attendance, are not materially more expensive in this country than in England, the gas lights can, and without doubt will be advantageously introduced into our manufactories. I wish you success in your laudable efforts to make this useful and comparatively novel subject known to our countrymen, who are certainly inferior to the people of no country in ingenuity, resource, and enterprise, although they often are, in that perfect knowledge of the subjects to which they turn their attention; which, in older countries, results from a more minute division of labour and employment, and of course a more complete devotion to one object.

I remain, sir, respectfully,

Your most obedient servant,

BENJAMIN SILLIMAN.

References to the Plate representing Melville's Improved Gas Apparatus for lighting manufactories, &c. with gas lights, produced from pit or stone coal.

FIG. I.

- AAA.** The floor and part of the structure of the gasometer house.
- B.** A furnace in which the retort is set.
- C.** The door of the furnace where the fire is placed.
- D.** The ashes hole.
- E.** The damper, or register to regulate the draft of the furnace.
- F.** A cast iron retort (with the door fixed on) in which the coal is put to produce the gas.
- G.** The condenser and bath.

- H.** A pipe which conducts the gas from the retort to the condenser and bath, where it passes several times through water, by which it is washed and purified.
- I.** A cistern set in the ground and kept filled with water by means of an aqueduct, the water from which passes through the bath, to a drain from the gasometer house.
- K.** The gasometer, or reservoir, which is suspended in the cistern of water, by a rope or chain leading over sheaves to a balance.
- L.** A pipe which conducts the gas from the condenser, through the water in the cistern, to the gasometer, where it is reserved for use.
- M.** A stop-cock to let off the gas until it becomes inflammable, and to burn it from, when the gasometer is full, to prevent its escaping underneath.
- N.** A balance of weights, to hold the gasometer in suspension and (by taking one or more of the weights off) to give force to the gas when necessary.
- O.** A pipe which conducts the gas from the gasometer house to the apartments where the lights are wanted; where it issues from the burners when vent is given to it, and on the application of a taper will burn with a brilliant flame without smell or smoke. The burners are fitted with keys by which the flames may be regulated, to give more or less light, or instantly extinguished, which operation may be performed on the whole at once, by means of a single key in the main tube.

FIG. II.

- P.** The form of the burner from which the gas issues, with the tube and glass, and key to regulate the flame, on a larger scale.

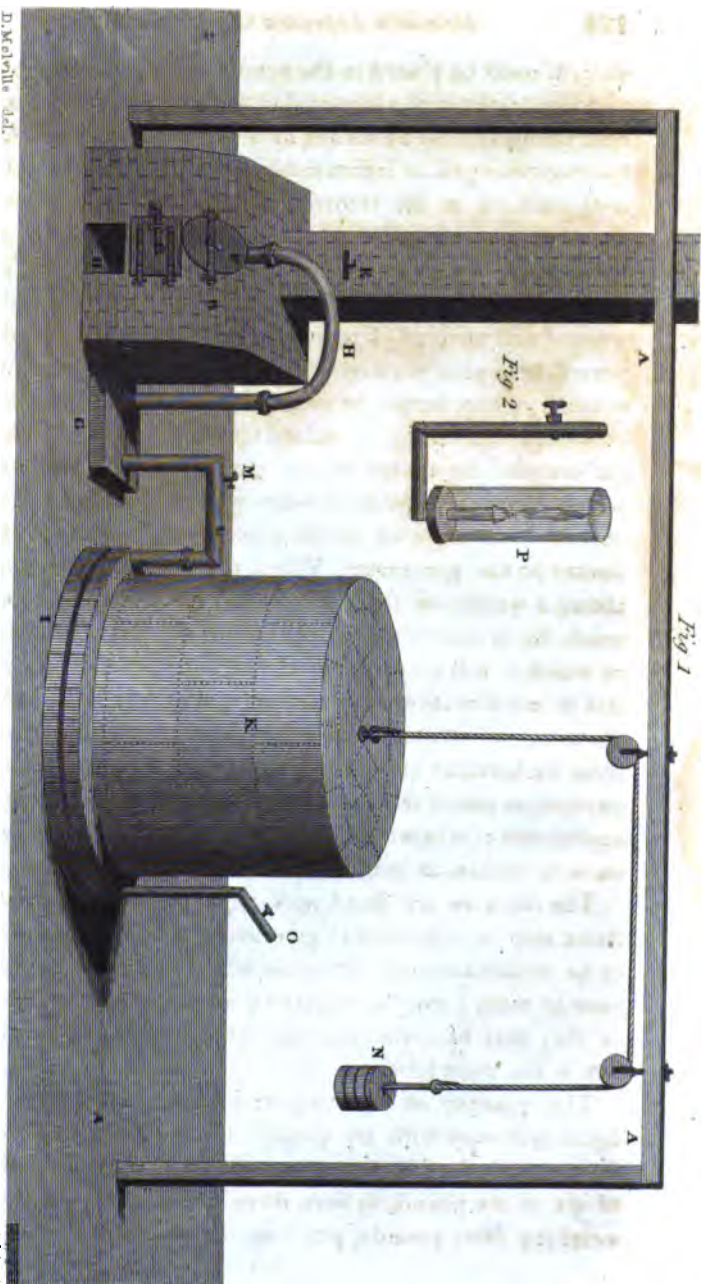
Specification of the mode of operation with Melville's Improved Gas Apparatus for lighting Manufactories, &c., with gas lights.

A quantity of coal in proportion to the number of lights re

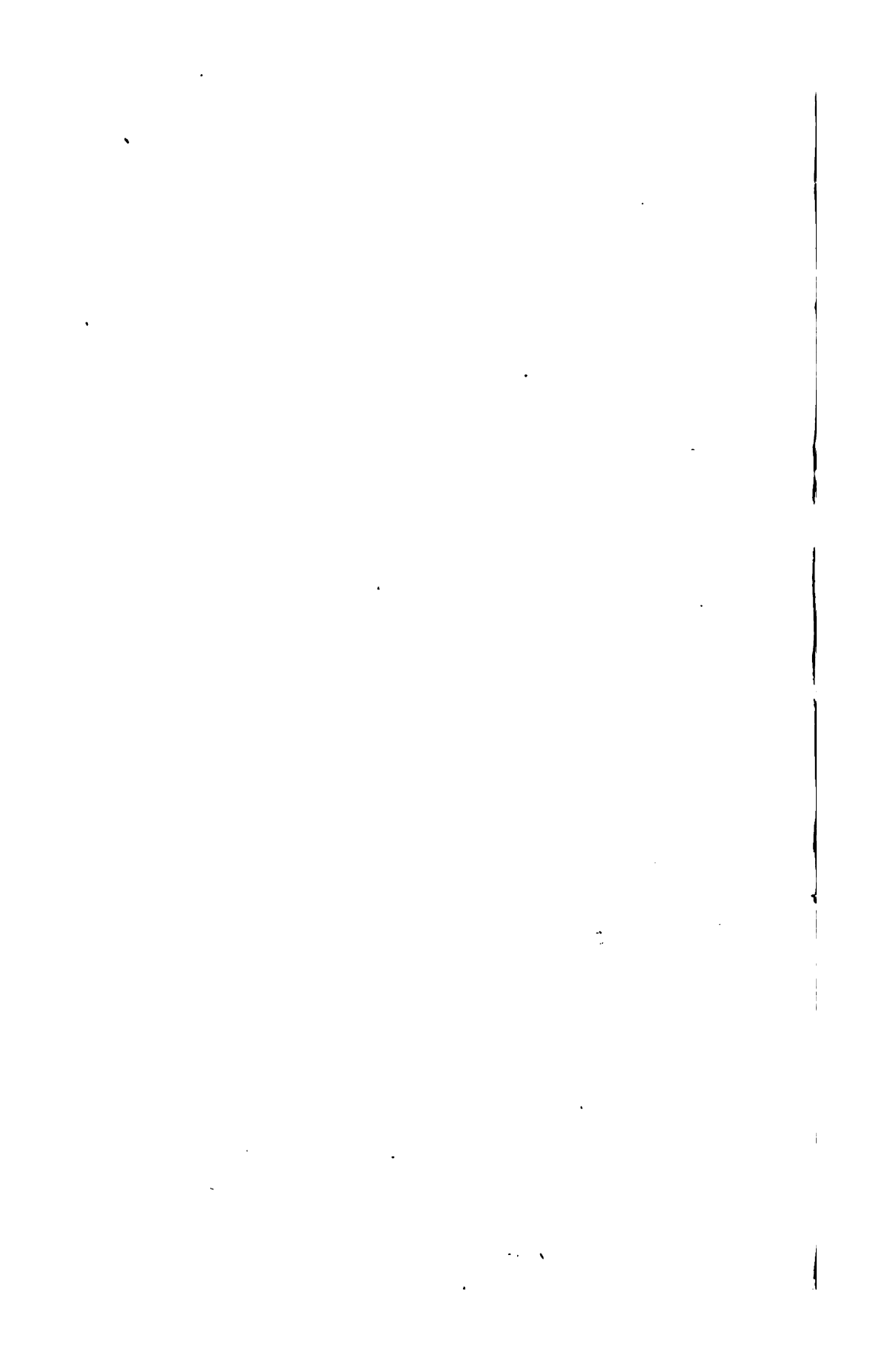
quired, must be placed in the retort, and the door screwed on and luted tight with a lute of clay and sand; this done, a strong heat being applied by means of a fire kept up in the furnace, hydrogenous gas, or inflammable air, will be driven out of the coal confined in the retort, and forced through the water in the bath in which the condenser is immersed; by passing through the water, the bituminous matter, which is a component part of the coal, is separated from the gas, which is washed and purified. From the condenser, the purified gas is passed by a pipe through the water in the cistern, to the gasometer, where it may be reserved for use. As the gas passes in, the gasometer will be raised up until it is filled; when full, (to prevent the escape of the gas underneath, and the smell which it occasions when it issues without burning,) it may be burned from the cock on the pipe which leads from the condenser to the gasometer. When the lights are required, by taking a weight off the balance, the gasometer bears with so much the greater force on the volume of gas contained in it, by which it will be propelled through the pipes to any distance and in any direction to the burners, which are situated where the lights are wanted. Immediately on the issuing of the gas from the aperture of the burner, and coming in contact with the oxygenous gas of the atmospheric air, it will take flame on the application of a taper, and burn with a brilliant light, without smell or smoke, as long as there is any gas in the gasometer.

The burners are fitted with keys by which each separate flame may be regulated to give more or less light at pleasure, or be instantaneously extinguished; and the whole (be there ever so many) may be regulated as to the size of the flame, or they may be instantaneously extinguished by turning the key in the main tube.

The quantity of coal required for any given number of lights will vary with its quality; the usual quantity is about forty pounds for fifty flames, equal to that of a moulded candle of six to the pound, to burn three hours. Two pecks of coal weighing forty pounds, put into the retort, will leave a reai-



Watt's Patent Improved Gas-Apparatus.



duum of near three pecks of coak, weighing twenty-eight pounds. The coak is better for many uses than raw coal, and if used in the furnace to extract the gas, will be nearly sufficient fuel for each succeeding operation.

Note.—Any person or company wishing to be furnished with the Improved Gas Apparatus, are requested to apply to Winslow Lewis, Boston, or David Melville, Newport, (R. I.) who are the sole proprietors of the patent right.

Medical and Philosophical Intelligence.

[From the Monthly Magazine for October, 1814]

It affords us the highest satisfaction to be able to state that the first of practical modern discoveries, the means of illumination by the gas of coal, proceeds in its application with all the success that can be desired. A new establishment has been opened in Worship-street in addition to that in the City Road, and both manufactories are constantly employed in evolving gas, which is preserved in butts, like beer, and sent for use to any distant place at which it is intended to be consumed. Many hundred butts, besides large reservoirs, have thus been manufactured during the summer, and kept in store for the winter. Already above a mile of the public streets is enlightened by this means, besides the Houses of Parliament and many public buildings. The beauty and brilliancy of the light exceed the powers of description, and can only be understood by being witnessed.

A new edition is printing, with considerable enlargements, of Mr. Arthur Young's celebrated Farmer's Kalendar, the most useful and important volume which perhaps ever issued from the press, a judgment in which the public opinion confirms us, by purchasing seven very large editions. Though the illustrious and veteran author is unhappily deprived of the enjoyment of his sight, yet his intellectual vigour continues unimpaired, and has been sedulously employed in the perfection of this favourite work.

Mr. Sawrey is preparing an account of the Morbid Anatomy of the Brain in Mania and Hydrophobia; with the pathology of the two diseases, and experiments to ascertain the presence of water in the ventricles and pericardium; collected

from the papers of the late Dr. Andrew Marshall, lecturer on Anatomy in London.

Dr. Johnson, of Bristol, F. L. S. &c. intends shortly to prepare for the press, a treatise on the medicinal Leech, the outline of which was lately printed at Edinburgh, under the title, "*Disputatio physica inauguralis quadam de Hirudine complectens.*" It is the Doctor's intention to describe minutely the singular structure of this interesting and useful animal, and to illustrate his description by engravings.

In this country (Sweden) Dr. Jenner ranks as one of the greatest benefactors of the human race, and vaccination is performed on all children within nine days from the time of their birth. The court, the clergy, and the medical profession, have zealously concurred; and, in consequence, the scourge of the small-pox is considered as extirpated from that country. Dr. Hedin's Report of these happy results has been reprinted by our House of Commons.

Smithson Tenant, Esq. has discovered a new method of double distillation by means of steam, whereby double the quantity of fresh water may be raised from salt water in a ship's kettle, that has hitherto been obtained. The circumstantial description of his process shows how steam can be made to pass through water, and thus contribute to evaporise it, so that an additional quantity of fresh water may thus be procured in the same time and with the same apparatus from sea-water at sea.

Mr. Housham has published a Series of Observations on the Formation of Human Bones. He began with a child or fœtus only seven weeks old, and continued his observations at different times for several years. He inspected the process by means of a powerful microscope, from which he observed that

the arteries secrete a mucilage which forms cartilage; that the cartilage shortly becomes tubular, with numerous spiculæ around it containing phosphate of lime; that in the course of time bony matter is completely deposited; and that, finally, laminæ appear. He describes with great minuteness the various forms which the matter assumed during the entire process of ossification, and also the structure of the most perfect bones, their nerves, blood-vessels, membranes, periosteum, &c.

PHILADELPHIA DISPENSARY.

FROM the Annual Report, published by the Managers, on the 26th instant, it appears that **THREE THOUSAND FIVE HUNDRED AND TWENTY-SEVEN PATIENTS** have been attended by the Physicians of the Dispensary from December 1st, 1813, to December 1st, 1814.

Patients remaining from last year	-	-	-	110
Admitted since that time	-	-	-	3417
Of these the number Cured is	-	-	-	3311
Relieved	-	-	-	46
Dead	-	-	-	72
Removed	-	-	-	19
Irregular	-	-	-	19
Remaining under care	-	-	-	60
				<hr/> 3527

The small number of deaths may be accounted for, by observing, that of these Patients, there are many cases of vaccination and of pregnancy. A considerable proportion of trivial cases also necessarily occur in an institution of this nature.

The receipts of the Dispensary during the past year, have been	-	-	-	-	2086	15
Balance due the Treasurer	-	-	-	-	-	21 74
						<hr/> \$2107 89

The expenditures, including balance due the Treasurer last year, and the payment of some of last year's accounts, have been
December, 1814.

\$2107 89

METEOROLOGICAL OBSERVATIONS.

State of the weather during the last six months of 1814.

JULY.

Thermometer—Lowest at 8 A. M. 60. 13th of the month.

Highest at 3 P. M. 85. 17th

Mean, 70.

Winds—westerly—frequent rains—an uncommonly cool month.—A violent tornado on the 1st, at Beaufort, South Carolina—28th of the month a very heavy rain at Philadelphia, commencing at 8 P. M., and continued for twelve hours.

AUGUST.

Thermometer—Lowest at 8 A. M. 60. 22d of the month.

Highest at 3 P. M. 85. 16th.

Mean 72.

Winds—chiefly westerly—several rains—measles continue—plague at Smyrna this summer.

SEPTEMBER.

Thermometer—Lowest at 8 A. M. 51. 26th of the month.

Highest at 3 P. M. 82. 4th.

Mean, 65.

Winds—variable from west to east—considerable rain—an aurora borealis on the 11th—on the 6th and 7th, frost at Quebec, so severe as to destroy nearly all the tobacco, melon, and cucumber plants, and the potato stalks—it was preceded by very warm weather, rain and thunder. The yellow fever prevailed at Gibraltar on the 16th, and at Cadiz on the 25th of this month.

OCTOBER.

Thermometer—Lowest at 8 A. M. 38. 24th of the month.

Highest at 3 P. M. 77. 3d.

Mean, 50.

Winds—much easterly wind—very fine clear weather with

little interruption. The crops of grain have been good, and well got in—the fruits of the earth plentiful and in perfection.

NOVEMBER.

Thermometer—Lowest at 8 A. M. 31. 29th of the month.

Highest at 3 P. M. 65. 14th.

Mean, 45.

Winds—northerly—but little rain—a smart shock of an earthquake, felt in Maine, Massachusetts and Rhode-Island, on the 28th, between 7 A. M. and 15 minutes past 7, in these different places.

DECEMBER.

Thermometer—Lowest at 8 A. M. 20. 26th of the month.

Highest at 3. P. M. 47. 1st.

Mean, 30.

Winds—westerly. First snow on the 6th, light—snow six inches deep on the 10th—ice in the river on the 12th—a meteor seen here and at New York on the 19th, about six minutes before 5 o'clock, A. M. Spotted fever appeared in Vermont and New Hampshire—the measles have continued throughout the year in this city, but have not been very prevalent—no small-pox.

RECENT BRITISH PUBLICATIONS.

A Practical Treatise on Porrigo or Scalded Head, and on Impetigo, the humid or running Tetter, with coloured engravings figurative of the diseases. By the late Robert Willan, M. D. F. R. S. and F. A. S.

Tracts on the Gout, illustrated by numerous cases; and on some Internal Inflammatory Affections, by Thomas Sutton, M. D. of the Royal College of Physicians, &c. &c.

Facts and Observations relative to the Fever, commonly called Puerperal. By J. Armstrong, M. D.

The Medical Guide for Tropical Climates, &c. by Richard Reece, M. D.

Veterinary Medicine and Therapeutics, containing the Effects of Medicines on various Animals; the symptoms, causes

and treatment of Diseases, with a select collection of Formulæ. Pt. I. The Materia Medica, pharmaceutical preparations and compositions. Pt. II. The Disorders incident to neat cattle, arranged according to the Nosology of Cullen, by W. Peck, Lond.

Lectures on Comparative Anatomy, with one hundred and thirty-two engravings. By Sir Everard Home, Bart. F. R. S. 2 Vols. royal 4to.

Enquiry into the Probability and Rationality of Mr. Hunter's Theory of life. By John Abernethy, F. R. S. 8vo.

Observations on the Diseases of Females; by Charles Mansfield Clarke, illustrated by copper-plates. Pt I. Royal 4to.

A Treatise on Hernia, by Antonio Scarpa; translated from the Italian by John Henry Wishart. 8vo.

Commentaries on the Treatment of the Venereal Disease, particularly in its exasperated state. By Edward Geoghegan. Octavo.

Practical Essay on the Diseases of the Absorbent System. By William Goodlad. 8vo.

An Essay on Medical Economy, comprising a sketch of the state of the Profession in England, and the outlines of a plan calculated to give to the Medical Body in general an increase of usefulness and respectability. 8vo.

An Essay on the Prevention and Cure of Insanity; with Observations on the Rules for the Detection of the Pretenders to Madness. By George Nesse Hill. 8vo.

An Account of Baths and of a Madeira House at Bristol; with a drawing and description of a Pulmoneter; and Cases showing its utility in ascertaining the state of the Lungs, in diseases of the Chest. By Edward Kentish, M. D. 8vo.

Results of Experience in the Treatment of Cases of Defective Utterance, from deficiencies in the roof of the mouth, and other imperfections and mal-conformations of the Organs of Speech. By John Thelwall, Esq. 8vo.

A Treatise on Hydrocephalus, or Dropsy of the Brain. By James Carmichael Smyth, M. D. F. R. S. 8vo.

An Account of the most important recent Discoveries and Improvements in Chemistry and Mineralogy to the present time; being an Appendix to the Dictionary of Chemistry and Mineralogy. By A. and C. R. Aikin. 4to.

Facts and Observations deduced from long and extensive Practice on Liver Complaints and Bilious Disorders in general, and on such derangements of these Organs as influence

the Biliary Secretions, with some New and Practical Observations on the various appearances of this important Secretion; connected by an appropriate and successful mode of Treatment, and the whole illustrated and confirmed by a numerous List of Cases; by John Faithhorn, formerly surgeon in the East India Company's service. 8vo.

An Essay on the Venereal Disease; by Richard Carmichael, M.R.I.A. Part I. 4to.

The London Dispensatory; by Anthony Todd Thomson. Octavo.

Animated Nature, or Elements of the Natural History of Animals: illustrated by short Histories and Anecdotes; by the Rev. W. Bingley, A. M. 12mo.

A General Description of Shells, arranged according to the Linnean System; by William Wood, F. R. S. and L. S. &c. No. IV. 8vo.

Manual of Mineralogy; by Arthur Aikin. cr. 8vo.

New and correct Tide Tables at all the Sea Ports in Europe; by Alexander Ingram. 12mo.

Experiments and Observations on the Atomic Theory and Electrical Phenomena; by Wm. Higgins, Esq. F. R. S. and M.R.I.A. 8vo.

T. Dobson, has in the Press

Dr. Cullen's First Lines of the Practice of Physic, with Notes and Additions, by B. S. Barton, M. D. Professor of the Theory and Practice of Medicine in the University of Pennsylvania.

Swediaur on the Venereal Disease, complete. Translated from the French, by Thomas T. Hewson, M. D.

Bradford and Read, of Boston, propose publishing Fordyce on Fevers.

* The publication of this Number of the Eclectic Repository has been delayed for three months, on account of the Printers having been called off to military duty.

In future volumes of this work, it is intended to publish the first number of each in January of each year.



THE
ECLECTIC REPERTORY

AND
ANALYTICAL REVIEW.

VOL. V.

APRIL, 1815.

NO. II.

SELECTED PAPERS.

Observations upon the Ligature of Arteries, and the Causes of Secondary Hemorrhage; with a Suggestion of a New Method of employing the Ligature in Cases of Aneurism. By BENJAMIN TRAVERS, Esq. Demonstrator of Anatomy at Guy's Hospital. Surgeon to the Hon. East India Company, and to the London Infirmary for Diseases of the Eye.

[From the London Medico-Chirurgical Transactions for 1813.]

THE adhesive inflammation is the primary resource of nature under local injury. It is employed in doing the repairs of the fabric which the other modes of inflammatory action secretly undermine or openly destroy. Suppuration and ulceration are invariably actions of destruction, when uncontrolled by the process of adhesion. This fact is strikingly exemplified in abscesses of the viscera which open externally, and in sloughs of the intestine *per anum*, as I had lately occasion to show in detail.* The single tube of the intestine, after division

* See "An Inquiry into the Process of Nature in repairing Injuries of the Intestines, illustrating the treatment of penetrating wounds and strangulated Hernia." London, 1812.

or loss of substance, is united, and forms a perfect tube again; that of the artery is obliterated: for the faculty of adhesive inflammation, upon which both phenomena depend, resides in the opposite surfaces of these canals, and coagulable lymph, which coats over the tied bowel, seals up the tied artery.

Before this adhesive inflammation was understood, surgeons attributed its proper results to other causes. The obliteration of an artery, included in a ligature, was supposed to be caused by the coagulation of the blood in the vessel: and as the existence of a coagulum of blood depended upon the exclusion of a portion of it from the circulation, if the ligature was placed in the vicinity of a large branch, the coagulum was not formed, and hemorrhage was inevitable. This was the doctrine recently taught in our schools, and illustrated by preparations; which, however, illustrate other points that might more accurately explain them.

The permanent obliteration of an artery can only be effected by an inflammatory adhesion of its internal surfaces. The adhesive inflammation of the internal or cuticular coat of arteries is sometimes, but rarely, spontaneous; it is excitable in this, as in other parts, by pressure and by wound.

1. I have seen the aorta just below its curvature, and in another subject, a little above its bifurcation, partially filled by pure lymph, without any aneurismal tendency.

2. The obliteration of an artery by pressure is a more frequent occurrence, as in the natural cures of aneurism and in those effected by art. I have a preparation showing the total obliteration of the right subclavian artery by an aneurism of the arch of the aorta. Mr. Blount informs me that he lately saw an aneurism of the thigh, under the care of Mons. Dubois in Paris, cured by steady pressure upon the vessel continued for twenty-four hours. It is not to my purpose to quote or relate cases, because these facts are familiar.

3. It was discovered by the celebrated Desault, that a round ligature drawn tight upon an artery, made a clean cut of its internal coat, and the experiments of Jones, devised and exe-

cuted with equal felicity, have established, that the obliteration of an artery tied with a round ligature, is only the cicatrization of this cut. To ascertain with precision the effects of ligatures of various sizes, both flat and round, I have repeatedly examined the appearances left upon the cuticular coat of the artery after applying them, and the following is a report of such experiments upon the carotid, iliac, and femoral arteries of the human subject.

<i>Broad Tape</i> - - -	}	No distinct impression, but a general longitudinal puckering or 'froncement,' as the French term it, of the internal coat, especially opposite the knot.
<i>Narrower Do. Do.</i> - - -		
<i>Narrow Tape</i> - - -	}	The same, with partial laceration. Cuts with a fretted edge, or partly cuts and partly tears.
<i>Narrower Do. Do.</i> - - -		
<i>Flat Bobbin</i> - - -	}	The same. Cuts cleaner.
<i>Large Round Do.</i> - - -		
<i>Twist</i> - - -	}	Clean and narrow incision.
<i>Twine</i> - - -		
<i>A round ligature including a sheath of linen upon the artery</i> - - -	}	Faint, but distinct incision.
<i>Do. including a cylinder of quill, wood, or other firm substance</i> - - -		
		Deep, but somewhat partial incision.

From these observations it appears that the flat ligature, as it is diminished in breadth, and admits of being more strictly applied, *i. e.* as it approaches to the form and size of the round ligature, imitates its operation, but fails to produce a simple incised wound, which every body knows is the wound best disposed to unite by adhesion. The inclusion of substances soft or hard in the round ligature does not materially alter its effect.

It being established that the internal coat of an artery is prone to take on the adhesive inflammation, and that it is only by virtue of this inflammation that the vessel can be permanently obliterated, it is not a question of difficult solution, whether the mere apposition of sound surfaces, the apposition of bruised and lacerated surfaces, or the apposition of fresh cut surfaces is the condition most favourable to union. What is the result of our familiar observation in practice, of the

comparative efficacy of pressure, of bruising and tearing, and of cutting, to excite adhesive inflammation? The obliteration of a hernial sac under the pressure of a truss, of an artery overlaid by a heavy tumour, and in general the cementing of entire surfaces, is a chronic process. Contused and lacerated wounds oftener suppurate or even slough, than kindly take on the adhesive inflammation. Surgeons anxious to procure a rapid union of parts, incise them for that purpose, as in the hare lip. The severe operation for hydrocele by incision rarely fails of its object.

It is curious to observe the revolution which has taken place within a few years in this branch of surgical practice, since experimental inquiry has furnished the true explanation of the principle upon which the ligature acts.

Mr Hunter and the surgeons who after him practised the operation for the popliteal aneurism, were in the habit of applying the ligature with force only sufficient to bring the sides of the vessel in contact; and some included an extraneous body, as a piece of cork or wood, or a roll of linen, to prevent the lesion of the artery in the act of tightening the ligature. The fear of cutting the coats of the vessel was uppermost in the minds of all, and next to this, the fear of quickening the process of ulceration, and the casting off of the ligature. Scarpa, Richerand, and the other eminent surgeons of the continent are still fettered by these fears. But we see that they are groundless; that, on the contrary, the security and effect of the ligature are ensured by its cutting the middle and internal coats, which it does without danger to the outer, however applied; and that retarding the process of ulceration when the ligature has done its duty, is not only useless but mischievous, as it increases the danger of secondary hemorrhage.

Jones, whose scientific and comprehensive view of this important branch of surgery,* must excite universal regret for

* See "A Treatise on the process employed by Nature in suppressing the hemorrhage from divided and punctured Arteries, and on the use of the ligature, with observations on secondary hemorrhage." London, 1802:

his loss and respect for his memory, ascertained, that the effusion of lymph from the wound inflicted by the ligature was sufficient, even if the ligature were removed upon the instant, to obstruct the artery. By including a loose thread along with the artery in the ligature, he readily withdrew the latter after the infliction of the wound. In one instance he succeeded with a single ligature, and in several instances with two, three, or four, made at a small distance apart. The lymph effused was in proportion to the extent of the section, or if this was incomplete, the union was equally so. He was led to conclude that the complete circular section of the internal coat was indispensable to union, and the success which attended his experiments led him to conjecture, that in some surgical cases, removing the ligature as soon as it was made would be an efficient operation. This suggestion, the value of which he left to be determined by future experimenters,* was caught at with eagerness by his readers, and by many considered to be the essence of his publication. It required little sagacity to discover the advantages which would result to practice, if it could be shown, that the effect of the ligature which heretofore required fifteen or twenty days, could be attained with equal certainty in little more than as many seconds. But just as was this calculation in theory, it was not yet realized in practice, and the fact was chiefly valuable as it afforded conclusive evidence of the principle which he had established, viz. that the obliteration of an artery was effected by the adhesive inflammation. For if the disposition of the cuticular coat to effuse lymph was such, that in some cases the mere wound, setting aside apposition of its edges, the condition commonly necessary to union, was sufficient to produce it, *a fortiori*, the wound of which the sides were kept in contact, would in all cases unite and by the

* "I leave the fact (viz. the complete obstruction of an artery consequent upon the momentary application of a ligature) for those who have opportunities of applying it in practice, when all the circumstances which determine its success or failure shall have been fully ascertained by further experiments on brutes." Jones on Hemorrhage, p. 136.

same medium. But the result of these experiments neither warranted the conclusion that the complete incision of the internal coat was necessary to union, nor that union was a necessary consequence of such an incision. The history of the broad tape or ribbon ligature, proves that contact without wound will sometimes produce adhesion, and the frequent repetition of Jones's experiment has proved, that wound without contact will often fail to produce it. Among others Mr. Dalrymple, surgeon, of Norwich, has decided the latter point by many trials. He informs me, that he "has repeated the second experiment of Dr. Jones's third chapter, of which the results are represented in his eleventh plate, not fewer than seven times on the horse, and three times on the sheep; and that in every instance he has failed to obtain his results. Not only has no coagulum been formed; but even where the subject of the experiment has been suffered to live until the thirteenth, fifteenth, or eighteenth day after the operation, the canal of the artery has not been found obliterated. In every instance, indeed, its calibre has been contracted; still however it has remained pervious in degree and capable of transmitting a lessened column of blood." The results of these experiments collectively, lead Mr. Dalrymple to the conclusion "that the internal and middle coats of an artery may be divided, the external tunic remaining uninjured, without being followed by the formation of a coagulum, or the obliteration of its canal." I am a good deal surprised at this notable difference in the results obtained by two experimenters of so much accuracy and discernment. To the presence or absence of the coagulum of blood no primary importance attaches, as it is a consequence only of the obliteration of the canal, and of that not always. The contraction of the vessel, contraction being invariably the concomitant of cicatrization, must always be the consequence of a wound of its coats. And the stated difference of result between the case in which the ligature is taken off the vessel and that in which it remains upon it, I should explain thus: in the former, union takes place between the edges of the severed coat side

by side (contraction), while in the latter it takes place between the opposite sides (obliteration).

The original experiment of Jones, in whatever light we view it, is of unquestionable importance, and deserves to be highly appreciated. While its occasional failure demonstrates that the apposition of the cut surfaces is essential to the certain obliteration of the vessel, its occasional success establishes that, *ceteris paribus*, it cannot, with this precaution, fail of its intention. And although uncertainty of result may preclude its application to practical surgery, I should little question its efficacy as a remedy for the aneurism, whether it simply diminished or totally arrested the column of blood, since the only theory of cure in this disease, obvious to my mind, is the diminution of the blood's impulse in the diseased and resistless artery. And here I cannot help observing, of what vast importance it is to the progress of science, to register facts of which the use is at present imperceptible or at most indistinct, as beacons for future travellers on the same road. If we reflect how many discoveries have been the creatures of accident, and how few have been led up to and perfected by one and the same mind, it will not appear unfair to conclude, that some may have been obscured and others lost, from a too light estimation, or a wilful disregard of these indirect aids and clues to knowledge.

From what has been said of the experiment of Jones, it will be understood, that it is evidence over and above what was required, to prove that the wound of an artery is united by the same process as a wound of the skin, but that like this the wounded surfaces require to be supported in contact.

II. It would be well if a surgeon, before tying up the main artery of a limb, were to turn in his mind the series of changes of which this operation is the commencement, the nature and relation of these changes to each other, and the degree in which they may be influenced by the form of the ligature and the mode of applying it.

First, the internal coat is to be excited to an inflammation

sufficient for the *vasa vasorum*, as they are called, to pour out lymph, by which the part of the artery adjoining the ligature becomes thickened, and being contracted in the form of a cone, is united at its apex. Within twenty-four hours this process should be considerably advanced, for at this early period begins the ulceration of the exterior tunic in consequence of the pressure of the ligature. The time required for its liberation varies according to the perfect or imperfect application of the ligature. In the arteries of the dog which are much smaller than the human, ulceration is generally completed in six days. I pass over the clot of blood, because its presence is accidental, though not always unimportant: the gradual obliteration of the old and the enlargement of the new channels of circulation, because these are indirect consequences of the obstruction which do not affect the security of the ligature; but there are direct changes to take place external to the artery. The capillaries of the wounded cellular membrane must assume the healing or adhesive action, and exude their lymph over and around the artery and into the cells of the membrane surrounding it, so that the ends of the vessel may be covered by lymph and the wound be in part filled by it, in six hours. Soon this lymph becomes organized, having a red and granulated appearance; it goes on increasing in thickness until it completely envelopes the vessel, and becomes so firmly compacted therewith as to make its extremities indistinguishable. After all this, after the severed vessel is thus carefully protected and fortified by a solid bed of lymph, and the wound is on the point of healing, a passage for the ligature is to be ulcerated through the lymph, and if, unluckily, the wound has closed over the ligature, an abscess must be formed to discharge it.* This is an outline of the changes which are required to ensue, and in the failure of one or other of them, the loss of a link in the chain, we may discover a cause of secondary hemorrhage.

* See Mr. Hunter's first case in the "Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge."

First, the inflammation of the cuticular coat of the artery may be deficient, or not a pure adhesive inflammation, and no healthy lymph be effused. This may arise from the debility of a constitution worn out by disease, from a morbid change in the texture of the vessel, as a deposition of earthy matter in its coats, or a pre-existing erythematous state of the internal tunic; or it may be owing to the use of a ligature which simply approximates the sides of the vessel, or of one which fritters the cuticular coat to rags instead of simply dividing it. Unhappily, neither of these causes will bar the ulcerative inflammation; they will rather predispose to it, and to such a condition of it as will not be bounded by the ligature.* But should the ulcerative absorption be completed at any point of the cylinder, and no union have taken place, the only security against secondary hemorrhage will be derived from the casual existence and extent of the internal clot of blood.

Secondly, the adhesive action within the vessel may have been healthy and the union of its sides completed at a sufficiently early period, but the muscular parts in the vicinity of the artery having been extensively and rudely torn asunder by the operator's fingers in searching for it, a large portion of it denuded of its sheath in placing the ligature upon it, and perhaps all this violence committed upon a half hectic subject, sinuses are formed upward and downward in the course of the artery.† Here the ulcerative action is undefined by the adhesive. The matter lodges about the artery and dissects the muscles far beyond the limits of the wound, and there is much reason to fear that the ulcerative absorption, by which the ligature is discharged, instead of being confined to the circle of the ligature, will extend upon the parietes, partially as they are defended by coagulable lymph, and destroy this lymph, together with the newly cicatrized extremities. In this way secondary hemorrhage is produced in stumps that ulcerate deeply after amputation, and in abscesses in the vicinity of

* Mr. Home's case of Mr. Marshall, *ibid.* vol. II.

† Mr. Hunter's 2d case. Mr. Birch's and Mr. Cline's cases, *ibid.* vol. I.

large arteries. I must remind the reader that the spontaneous steps of nature, in the suppression of hemorrhage from wounded arteries, differ only in the outset from those which follow the employment of the ligature. The blood extravasated into the sheath of the wounded vessel does the office of the ligature; *i. e.* it forms the temporary barrier until the coagulable lymph is effused under the adhesive inflammation, which constitutes the permanent one. This analogy premised, I shall here relate a remarkable case of a wounded femoral artery, to show how the lymph, which seals the vessel, being destroyed by ulceration in common with other parts, this admirable resource of nature is cut off.

CASE.

Ann Mould was brought into Guy's Hospital on the 2d of December, 1811, intoxicated. She had been run over by a coach. The wheel had passed over the lower and back part of both her thighs. A small deep wound was found in the ham, from which there was a free hemorrhage, to appearance venous. The wound was dilated, but no bleeding vessel discovered; it was dressed, and a gentle pressure applied. From the swollen state of the limb it was thought right to keep up evaporation from the surface. It was evident, for some days after the accident, that an internal hemorrhage was going on, and the blood extravasating between the flexor muscles on the thigh. The integuments of the whole limb became distended and the wound turned sloughy. Fomentations and poultices were applied; an ichorous and bloody matter issued from the wound, and the swelling of the limb was somewhat diminished. On the 14th of December the wound had assumed a much healthier appearance, and things seemed fair for recovery.

On the 17th at ten o'clock at night, Mr. La Serre was called to his patient on account of so profuse a bleeding from the femoral artery, that he found her dying upon his arrival at her bedside.

Dissection. A large ulcerated cavity, containing blood and pus, was found between the muscles which form the hamstrings. The femoral artery had been completely divided, its extremities retracted and thrown out of their relative situation. It was plain that the artery had been severed, for the mouth of the inferior portion was conical and sealed by lymph. The other end of the vessel terminated abruptly in the abscess, a very small crust of blood lying within it. The ulceration was extending in this direction, having destroyed the sheath, dislodged the external clot, and opened the cicatrized extremity of the artery. From this the fatal hemorrhage issued.

The deposition of lymph, internally and externally, is induced by the same inflammation, and takes place at one and the same time, and both concur essentially to the security of the vessel; when therefore the external deposition is destroyed by a supervening ulceration, the security is diminished in the proportion of its importance. Mr. Abernethy mentions a case, wherein ulceration extended to the iliac artery from an adjoining lymphatic gland, by which a great hemorrhage was caused, while the ligature below remained firm.*

There is yet another and a prolific source of secondary hemorrhage, even where the ligature has done its duty; I mean the direct sloughing or gangrenous inflammation of the arterial extremity. This happens in aneurisms and amputations upon persons of irritable habits; in casualties which deeply shock the nervous system; and occurs most especially in the wards of crowded hospitals, where gangrene has become contagious.

EXPERIMENT.

Two ligatures were applied on the femoral artery of an ass, at the distance of one quarter of an inch, and were immediately cut away. On the following day the thigh was tumid and hot, and the wound soon ulcerated extensively, yielding a copious and offensive sanies. This condition of the parts in-

* Surg. & Phys. Essays, Part III. p. 167.

creased until the fourteenth day, when the animal was killed. It appeared, on dissection, that the ulceration had extended farther internally than externally, having spread among the muscles and under the skin, for many inches above and below the original wound. A clot, one inch and a quarter in length, was found within the artery, the effect of the obstruction which had been established by the adhesive inflammation. The portions of artery, which had been included between the ligatures and the lymph contained in it, and surrounding it, were actually in a sloughing state. Beyond this part, the upper and lower portions of artery, which were of a deep red colour, adhered to the clot sufficiently to prevent hemorrhage.

This case shows the destruction of the external bed of lymph, and the precarious security maintained against secondary hemorrhage, where the sloughing inflammation has taken place. It might excite surprise, that an operation so favourable to the healing of the wound, should prove so severe in its effects; but these are to be ascribed to the standing posture of the animal, which, as it is unfavourable to the return of the blood, and requires a constant muscular exertion, carries the inflammation beyond its due bounds, and hurries the adhesive into the ulcerative action; as would most certainly be the case in the human subject under the same circumstances. For this reason, the carotid of animals is to be preferred to the brachial or femoral arteries, as the subject of experiment.

CASE.

In the year 1804, an athletic man, enjoying vigorous health, suffered amputation at the thigh at St. Thomas's Hospital, immediately after a compound fracture and laceration of the leg. The arteries were suffered to bleed freely before they were secured.* The stump early put on a very unfavourable appearance, and at the second dressing was in a sloughing

* See Mr. Hunter's excellent remarks on bloodletting after severe wounds and amputations. *On the Blood*, &c. p. 564.

condition. For the first five days the man had been kept low; after the fifth he had a pint of porter daily. On the ninth day he became delirious, at first through the night only, but after the eleventh the delirium was constant. At this time there was general disturbance of the nervous system with watching, and he muttered, and picked the bed-clothes. His pulse, though full, was intermitting. On the tenth he began to take wine and bark freely in addition to his porter. On the twelfth he lay muttering with his eyes close, and pressed the lids together so closely, as to resist every attempt that was made to open them. He was perpetually waving his hand above the bed-clothes. His pulse was 120, full and regular. He retained the power of swallowing, but passed his evacuations, unconscious of them. He died at the end of the thirteenth day.

Dissection. The stump was excavated by sloughing, and an inch of bone was bare, but in many places the slough had separated, and granulations and good pus appeared. The ligature, on the femoral artery, was so nearly detached that it came away on removing the dressings. There was found, on inspecting the artery, a clot of blood which reached to the first collateral branch, and was one inch and a half long. This coagulum did not quite fill the canal of the vessel, nor did it in the least adhere to its internal coat. The lower was smaller than the upper part of the coagulum, for there the artery was not contracted. The truncated extremity of the vessel was open, ragged and sloughy. There was a very little coagulated lymph round the external coat, at its extremity, but none within it. The internal coat was of a uniform vivid red colour, and this extended even above the bifurcation of the aorta and some way down the iliac artery of the opposite side. The viscera were all perfect and healthy.

This case exemplifies an accidental advantage to be derived from the internal coagulum of blood. Hemorrhage was prevented only by its extent. The conical shape of the clot and the sloughs lying about the extremity of the vessel, evince that it had been contracted, and had undergone the adhesive pro-

cess. Had the collateral branch opened at the distance of three or four lines from the extremity of the artery, the clot, which would have been accurately of the same extent, must have been carried away by the torrent of the circulating blood, when, from the death of the lymph, it became the only remaining stay to hemorrhage.

EXPERIMENT.

The left femoral artery of a large Newfoundland dog was tied with a single ligature. A portion of the sheath and the anterior crural nerve were included in the ligature. Next day the animal was very lame in his left leg, and his toes doubled under him as he walked. There was no sensible change in the temperature of the limb. On the fifth day a hemorrhage took place from the wound. On the sixth day the dog was ill and refused to eat. On the seventh he was found dead, from a return of hemorrhage during the night.

Dissection. A very extensive sloughing of the cellular membrane around the wound had taken place. The artery itself had sloughed at the part where the ligature was applied, and its divided portions had retracted. Each end of the vessel was dead to some distance above and below the slough.

In this experiment an additional cause to the strained position of the limb, probably operated to produce the mischief. This was the inclusion of the nerve in the ligature. See the report of a similar experiment by Pouteau,* followed also by fatal hemorrhage.

It would be superfluous to expatiate upon the obvious and important practical lessons which these experiments convey; first, the perfectly relaxed and easy position of the limb after the operation, from inattention to which Petit lost a patient by secondary hemorrhage;† and secondly, the application of the ligature to the artery exclusively.

* *Melanges de Chirurgie*, p. 302,

† *Mém. de l'Acad. Roy. des Sciences*. An. 1732.

The last narrative calls to my mind the case of a female upon whom Mr. Abernethy performed the operation for a popliteal aneurism. Pain and sickness were experienced after the operation, fever and restlessness came on, and a fatal hemorrhage happened on the third day. Dissection showed that the whole surface of the wound was in a sloughy and putrid state. The internal coat of the artery was highly inflamed and its orifice pulpy and sloughy.*

Secondary hemorrhage sometimes results from the laceration of the young and tender cicatrix, when the ligature is violently plucked away. Of this I could recite an instance, but it is not to be classed among the natural causes.

The causes which I have enumerated are three-fold.

1. Failure of the adhesive inflammation.
2. Diffused and extending ulceration.
3. Sloughing or gangrenous inflammation.

These may be severally induced by many other circumstances than those which I have mentioned. Each admits of being aggravated, if it is not occasioned, by unskilful operations and ill adapted ligatures.

III. The desiderata in the operation for aneurism, as it is at present performed, are to excite, with certainty and rapidity, the adhesive union of the sides of the artery; to limit the ulcerative process as much, and to complete it, as early as possible.

I have already pointed out the difference, in the action of ligatures, to accomplish the purpose of their application.

In this country the broad ligature is exploded from reputable surgery;† the ligature in use is round, whether larger or

* Surg. Obs. on Aneurism, p. 229.

† The surgeons of the Continent are greatly behind-hand on this subject, notwithstanding the indefatigable labours of Professor Scarpa. They clearly do not understand the train of actions set up by the ligature. It is astonishing that so intelligent a person as Scarpa should still practise the sheathing of the artery with linen. He cannot surely know, that it is unnecessary to the security of the external coat; and that, in twelve hours, the vessel would be as well sheathed with lymph, which this wadding intercepts, and through

smaller, and two are generally applied at an interval sufficient to admit of the division of the included portion of artery; after which the extremities retract to a considerable distance within the sheath. When the ligature is applied with but moderate tightness, from fear of injuring the arterial coats, it is liable to be thrown off the divided vessel; an event of which I was once a witness. On this account it was proposed to pass a stitch through the artery, to retain it; which, if the ligature were lax, would not prevent hemorrhage, and was an useless precaution if drawn tight, because in this case it indents the external coat in a groove, where it divides the muscular and internal, and thus obtains a firm seat. But I can see no advantage resulting from the division of the artery; and although the practice was introduced upon authority to which I pay the highest respect, the benefit has been rather supposed than proved. If it carries with it no advantage, it is not free from objection. The ligatures must be applied at a greater distance apart, than would be necessary if the vessel were left continuous, and the retraction which ensues upon division, renders the cavity of the wound larger, and the effusion of lymph of necessity greater than it would otherwise be, for this always extends beyond the extremities of the divided vessel. Even though the external wound is of the full extent required for the convenient application of the ligatures, they will be carried to a distance under the muscles and integuments, and the suppuration which they excite will be more profuse and more confined, a circumstance of which I have before shown the evil consequences. If, on the other hand, two ligatures are applied, and the included portion of artery left to fade, or only one ligature is used, a practice much to be preferred, the extremities, being previously fixed by adhesion to the sheath, will retract very inconsiderably, if at all. I was led to this observation by comparing the appear-

which it must work its way by ulceration. Scarpa unfortunately disclaims experiment and holds its results cheap. This ill founded and unphilosophical opinion has materially retarded the progress of surgery, even in this country.

acts of parts in which these different methods of operating had been practised. I tied one carotid of a dog according to the present mode of operating, and the other with a single ligature, and found remarkable difference in the extent of surface of the wound, the distance of the arterial extremities, and the quantity of lymph shed over and around them.

In addition then to the greater simplicity of the operation, the limitation of the bed of the wound, and the casting off of the ligatures at the point of their original application opposite to it, are advantages obtained by the non-division of the vessel. These circumstances are important, as they limit the suppurative and ulcerative processes to a smaller compass, and quicken the separation of the ligature. To some this last might appear an objection, as it was formerly urged against the tight ligature, under the idea that the adhesion might not be previously established. But experiment proves that a due relation is preserved between the leading and the subsequent stages of inflammation; the actions are not single and independent, but form a train and go on in harmony with each other, so that the quickness of the ulcerative is only a consequence of a proportionate celerity of the adhesive action. In this respect the actions of inflammation ensuing upon injury are not strictly morbid, for they bear a stronger affinity to the phenomena of health than of disease, and thus we talk of healthy inflammation and healthy pus. A perfect union by the first intention is the best security against slow or spreading ulceration; and the means above explained, by which we secure a perfect union, tend in the greatest degree to make ulceration quick and definite. Formerly lax ligatures were used to retard ulceration, so that by the same means by which ulceration was rendered slow, adhesion was rendered imperfect.

I have been led to these observations, in considering the present method of operating. But it appears to me that the residence of the ligature on the artery stamps an imperfection on the operation for the aneurism, which the facts ascertained by experiment plainly indicate to be remediable. Such is the

rapidity of the union by adhesive inflammation, that lymph is in a state favourable for organization in less than six hours in a wound, the sides of which are preserved in contact. And long previous to the appearance of that coagulable lymph which is the medium for the inosculation of vessels, a glutinous exudation from the cut surfaces fastens them together. In my experiments on the intestines of dogs I had many proofs of this, and the same thing has been observed in wounds of other parts. But would the pared edges of a hare lip unite by adhesion, favourably as they are disposed to union when brought in contact, if they were allowed to remain asunder? Certainly not. It occurred to me therefore, that if a round ligature were applied and suffered to remain upon the vessel for a few hours, it would have fulfilled the intention of its application, and by its removal at this period, the dangers and inconveniences attending its stay would be obviated. Suppuration, which chiefly results from the irritation of the extraneous body, was never observed in less than twenty-four hours, and very seldom so soon; and although the ulcerative absorption, which sets the ligature free, commences at the period of suppuration, it is never finished in less than eight, seldom in less than fifteen, and often not in twenty days. Now if the opposite lips of the wound in the artery were kept in contact for a time sufficient to ensure their adhesion, suppuration and ulceration of the external coat of the artery would probably never ensue; the artery would be obliterated without losing continuity, and the wound would heal like a simple wound, by the first intention. This reasoning seemed to me plausible enough to justify an experiment or two; I made them, and the following is the report.

EXPERIMENT I.

The right carotid of an ass was exposed by dissection. A piece of coloured twine was laid parallel with the artery, and included with it in a round ligature drawn into a single knot.

The integuments were then stitched together by an interrupted suture, and at the end of six hours the circular ligature was drawn away by the slip of twine. The animal lost very little blood, although from the depth of the vessel and the condition of the beast it was not completely exposed and secured without a considerable separation of parts. The diary of his life for a fortnight succeeding the operation presents nothing worthy of note. The natural functions went on as before, the wound discharging pus freely. I should observe, that the peculiar texture of the integument of these animals causes every wound extending beneath it to suppurate.

In the act of manducation, on the day fortnight of the operation, a stream of arterial blood jetted from the wound. I was present and allowed it to continue; it did so for ten minutes or thereabouts, when the animal fainted; it stopped, and did not afterwards recur.* In two days after he seemed to have recovered the loss of blood, and to be as well as before; and the artery upon examination, appeared to be almost united, in one part.

EXPERIMENT II.

The carotid of a blood horse was tied, a slip of twine being included in that which formed the ligature, as in the preceding experiment. The wound was brought together by a single suture, and the ligature withdrawn by means of the slip in *two* hours. The operation was done at six o'clock p. m. and the animal knocked down fifteen hours after, viz. at nine o'clock of the following morning. The artery, upon examination, was slightly united at one part.

* This blood must have issued from a branch opened by ulceration in the cavity of the wound.

EXPERIMENT III.

The left carotid of the ass which was the subject of the first experiment, was treated in the same manner as the right had been, except that the ligature was withdrawn at the expiration of *one* hour. Next day the animal was killed, having survived the first operation seventeen days, the second twenty hours. The left carotid, on dissection, appeared to be almost united, for some space.*

That the coaptation of the wounded surfaces of the cuticular coat of an artery, if preserved for a short period after the infliction of the wound, renders its obliteration certain, is a fair inference from these experiments. A more extended scale of inquiry, however, is required to establish the uniformity of their results. They afforded evidence that the circulation was arrested, by the absence of the pulse in the artery continuing after the removal of the ligature; and the vessel was therefore concluded to be as impervious as if the ligature had remained upon it. But upon this event I think it would be impossible to calculate with confidence, unless the ligature were suffered to remain upon the vessel for a time sufficient to insure the organised adhesion of its sides. In Jones's experiments, the return of the circulation was invariably ascertained after the removal of the ligature; and he seems to have regarded this as a proof that the subsequent obliteration of the canal was effected by a process independent of the coagulation of the blood. But in all these and similar experiments, the blood, as blood, has no concern in the obliteration of the vessel: the conical coagulum of blood is not formed in the first stage of the obstruction; its formation is gradual, and appears to require a change in the properties of the vessel consequent upon the abolition of its function. And although the presence of the conical clot satisfactorily demonstrates the obstruction of

* The appearances of the arteries on dissection are represented by plates, in the original work.

the canal, it is sometimes very inconsiderable, and at other times deficient, where the obstruction is complete. It is a mistake therefore, to regard the coagulum of blood among the immediate effects of the ligature; it is an incidental consequence only of the permanent obstruction which it has been supposed to constitute; without which it never could be formed; nor, if formed, ever be competent to the purpose of permanently obstructing the canal of an artery.

In the materials of this paper I have derived assistance from my friend and colleague Dr. Farre. It would be injustice to myself, as well as to him, to conceal an obligation, which I feel it creditable to owe, and grateful to acknowledge.

Analysis of the Bones of the Spine, in a Case of Mollities Ossium. By JOHN BOSTOCK, M. D. Vice President of the Liverpool Literary and Philosophical Society, &c.

[From the London Medico-Chirurgical Transactions for 1813.]

ALTHOUGH it is generally understood, that, in the disease called Mollities Ossium, the bones are deficient in their proportion of earthy matter, yet I am not aware of any actual analysis of them that has been made. On this account I embraced an opportunity which presented itself of examining their composition, and I propose to submit to the Society the result of my experiments.

I received from Thomas Christian, of Liverpool, two of the dorsal vertebræ, with their accompanying ligaments and membranes, of an adult female, whose bones were discovered, after death, to be unusually soft and flexible. On account of the extreme softness of the bone it could not be detached from the periosteum: the whole was therefore kept for some days in cold water, in order to separate the blood and other extraneous matters. One of the vertebræ was then digested for about

an hour in warm water; the ligaments and membranes were now easily removed from it; and the bone itself, when dried by a moderate heat, was found to have lost a considerable portion of its weight, and to be converted into a substance of an extremely porous and delicate texture. The body of the vertebra separated with a slight touch from the processes, and the central part of the body itself possessed so little coherence, as scarcely to permit it to retain its usual shape. The water in which the bones had been digested, as it cooled, exhibited, on the surface a layer of fatty matter, and the fluid itself produced a considerable precipitate with the tincture of galls; thus proving that it contained a portion of jelly. After having been dried by a moderate heat, 50 grs. of the body of the vertebra was exposed for two hours to a red heat, when only 13,5 grs. were left of a coarse white powder. The proportion of earthy matter in the processes was still smaller: the whole, which after desiccation weighed 106 grs., was reduced by calcination to 17 grs. A portion of this powder had four times its weight of muriatic acid added to it, mixed with an equal bulk of water, by which it was quickly dissolved with effervescence.

A portion of the bone, in its entire state, was subjected to the action of diluted muriatic acid, and after being digested for ten days, it was removed, well washed in cold water, and then dried by a moderate heat; when it was found to be considerably more soft and flexible than before the experiment. The fluid in which it had been digested was copiously precipitated by ammonia. The bone was then boiled in water for half an hour; by this operation it was entirely broken down into small flakes, while the periosteum was left entire, although diminished in bulk.

These experiments decidedly proved, that this diseased bone was very deficient in the usual proportion of earthy matter. A healthy bone, after having been calcined, retains its form and a considerable degree of hardness, and the digesting of bones in hot water does not materially affect their shape or their texture, unless they have been reduced to small

pieces, or have been acted upon by a high temperature under an increased pressure.

The following method of calculation will enable us to form a rough estimate of the composition of the diseased bone. One quarter of the body of one of the vertebræ, with its investing membrane, was dried, by exposure to the open air for fourteen days, and was found to weigh 52 grs.; the membrane, when detached by boiling, weighed 19 grs., and the bone itself weighed 15,5 grs. What was removed by boiling, amounting to 17,5 grs., must have been the jelly and oil, and of the 15,5 grs. of bone we may conclude, from the effect of calcination, as stated above, that 4,05 grs. alone would consist of earthy matter. In order to ascertain how much of the jelly and oil was contained in the bone itself, and how much in the investing membrane, a portion of membrane was digested in weak muriatic acid, then well washed in cold water, and afterwards boiled for some time, by which it was reduced from 33 grs. to 19,5 grs. Hence it will appear, that about 13 of the 17,5 grs. must be given to the membranous matter, leaving 4,5 grs. of jelly and oil for the bone itself. By a simple calculation we shall find, that 100 parts of the bone, independent of its investing membrane, consist of

Jelly and oil	-	22,50	,
Earthy matter	-	20,25	
Cartilage	- -	57,25	
		<hr/>	
		100,00	

Although the analysis of bone has engaged the attention of some of the most eminent chemists, both in this country and in France, yet there is still a degree of doubt respecting the exact proportion of its ingredients. This is occasioned by some uncertainty as to the state of the bones previous to their examination, and also from the vague ideas, which, until very lately, were entertained, concerning the different species of animal substances. When bones are analysed, they are gene-

rally used in what is called a dry state; but it is evident that this term can only be employed in an indefinite manner, and that no degree of desiccation can remove from the bones, the oil, and probably a portion of the water, that is diffused through the cells; this can only be accomplished by breaking the bone into small pieces and boiling it; and the process of boiling, at the same time that it removes the oil, will also dissolve the jelly; which probably ought to be considered rather as one of the proper constituents of the bone, than as a substance mechanically diffused through its parts. Without proper precautions there is also reason to apprehend, that the process of boiling would likewise remove part of the membranous matter. These observations apply to the first of the circumstances which I mentioned, and I have only to remark, that even M. M. Fourcroy and Vauquelin, who have paid so much attention to the subject of animal analysis, make no mention of any animal substance, as entering into the composition of bone, except solid gelatine.* Making use, however, of the best data which we possess, we may conclude, that human bones in their natural state, contain considerably more than half their weight of earthy matter, whereas the diseased bone in question contained, in one part, one-fifth only, and in another one-eighth of its weight.

The analysis of the earthy matter of the bone was then attempted in the following manner. A portion of the calcined bone was dissolved in four times its weight of diluted muriatic acid. To this solution ammoniac was added in excess, which threw down a copious precipitate, which was collected and calcined at a red heat (*a*). The fluid had then carbonate of ammoniac added, by which a flocculent precipitate was thrown down in small quantity; this was also collected and dried (*b*). The residual fluid was lastly precipitated by muriate of barytes, and the precipitate was collected and calcined

* Ann. Chim. 47: 258. Mr. Hatchett, in his valuable experiments on bone, only examined the nature of their ingredients, without attempting to ascertain their proportion.

at a red heat (c). The precipitate from the muriatic solution by ammoniac (a) was boiled in potash, and after being collected and dried, was again boiled in acetous acid; the residual fluid was then precipitated by carbonate of soda, and the precipitate was collected and calcined at a red heat (d).

Considering the precipitate by pure ammoniac (a) as a mixture of the phosphates of lime and magnesia, and the last precipitate (d) as pure magnesia, the quantity of phosphate of magnesia in the former precipitate was estimated. The second precipitate (b) was supposed to be carbonate of lime, and from the quantity of sulphate of barytes in the third precipitate (c) the quantity of sulphate of lime in the bone was ascertained. The respective quantities were nearly as follows:

Phosphate of lime	-	67,2
Sulphate of lime	- -	23,2
Carbonate of lime	- -	5,6
Phosphate of magnesia		4
		<hr/>
		100,0

The composition of the entire bone will be as follows:

Cartilage	- - -	57,25
Jelly and oil	- - -	22,5
Phosphate of lime	-	13,6
Sulphate of lime	- -	4,7
Carbonate of lime	-	1,13
Phosphate of magnesia		,82
		<hr/>
		100,00

The usual tests for iron were employed, but there was no indication of its presence.

Knotshole Bank, near Liverpool,

Dec. 2. 1813.

An Account of the Anastomosis of the Arteries at the Groin. By
ASTLEY COOPER, Esq. F. R. S. Surgeon to Guy's Hospital.

[From the London Medico-Chirurgical Transactions for 1813.]

IN a paper, which I had formerly the honour of reading to this Society, I endeavoured to describe the course of the new channels for the blood, when the femoral artery has been obliterated by the operation for popliteal aneurism. Since that period I have had an opportunity of dissecting two persons in whom the iliac artery has been tied; and, as one of these had survived the operation a much longer time than the other, an opportunity was given, not only of seeing the blood-vessels, when the course of the blood is established, but also of tracing the gradual progress of the new circulation.

Hypothesis would lead to a belief, that anastomosing vessels would be numerous in proportion to the time which had elapsed from the operation; but the reverse of this is the fact; for at first many vessels convey the blood originally conducted by the principal artery; but, gradually, the number of these channels becomes diminished, and, after a length of time, a few vessels, conveniently situated for the new circulation, are becoming so much enlarged, as to be capable of conveying an equal portion of blood to that which passed through the original trunk.

In examining, therefore, the two limbs, which I have the honour of showing to the Society, many more anastomosing vessels are enlarged in that which had been recently the subject of the operation, than in the limb on which the operation had been performed for more than two years; a circumstance which has not arisen from a more successful injection, as the one had been as well injected as the other.

It may be further observed, that a person who has his iliac artery tied for an aneurism of the groin, recovers the use of the limb much more quickly than when the aneurism is situated in the middle of the thigh; for, in the inguinal aneurism

the principal anastomosing vessels are left free from pressure, but the femoral aneurism is buried so deeply in the muscles of the thigh, that the branches of the *arteria profunda* are compressed, and the passage of the blood to the lower part of the limb is impeded.

In about six weeks from the operation in the former case, the patient is able to make use of the limb, but in the latter, the muscles of the leg and foot will be some months before they recover their powers, requiring the absorption of the aneurismal contents, and the consequent removal of the pressure upon the nerves and vessels.

This observation, however, applies principally to large aneurisms, on which account, it is desirable in femoral aneurism, if not, indeed, in all others, to perform the operation in an early state of the disease.

One of these cases was that of a man of the name of Garrett Riley, who was a patient in Guy's Hospital, and had his iliac artery tied on the 14th of February, 1811; this man died ten weeks and six days after the operation, in consequence of the bursting of an aneurism at the bifurcation of the aorta; he was sitting, as I was informed, by his dresser, Mr. Barraud, in the square of the Hospital, when he suddenly fainted; he was taken into his ward, and in a few minutes afterwards expired.

Upon inspection of his body, besides the aneurism at the bifurcation, which had burst, five aneurismal swellings will be seen in the limb, which I have now the honour to exhibit to the Society, one at the origin of the *arteria profunda* in the groin, a second in the middle of the thigh, where the artery pierces the tendon of the triceps, which aneurism was of large size, and was that for which the operation was performed; a third aneurism was placed in the ham, and between the popliteal and femoral there were two smaller aneurisms.

This man was a bricklayer's labourer, and the great exertions he had made in carrying loads up ladders, was, in his mind, the cause of the disease. Upon endeavouring to ascertain the mode in which the blood took its course through the

limb, it was found that the femoral, tibial and fibular arteries were still open, and that the blood was conveyed into the femoral artery by the following anastomoses: The internal pudendal artery formed several large branches upon the side of the bulb of the penis, and these branches freely communicating with the external pudendal artery, had determined the blood into that artery, and by this channel into the femoral; the lateral sacral artery also sent a branch, on the iliacus internus muscle, into the femoral artery, and the ilio lumbar artery freely communicated with the circumflex ilii, so that by these three routes, the blood found direct ingress to the femoral artery.

Numerous branches of arteries also passed from the lateral sacral to the obturator and epigastric arteries, the obturator in this case having its origin from the epigastric.

Beside these arteries, a free communication existed between the arteria profunda and circumflex arteries, with the branches of the internal iliac; first, the gluteal artery sent a branch under the gluteus medius muscle to the external circumflex artery; secondly, the ischiatic artery gave two sets of branches of communication, one upon the gluteus maximus muscle to the arteria profunda, and another upon the sciatic nerve to the internal circumflex artery; the internal pudendal artery also sent a branch of communication to the internal circumflex; lastly, the obturator freely communicated with the internal circumflex.

These then are the channels for the blood in an early date from the operation, but at more remote periods, as the anastomosing branches become larger, they are less numerous, and the description of their course is much more simple.

The second case was that of James Nutter, aged 37, who had the operation of tying the iliac artery performed on the 24th August, 1810, on account of a large femoral aneurism above the tendon of the triceps. This man survived the operation nearly three years, and dying in Guy's Hospital, I had an opportunity of examining his body, and of learning the condition of the parts which had been the subject of the ope-

ration. The external iliac and the femoral arteries were obliterated, excepting about an inch of the femoral artery just below Poupart's ligament, which still remained open, and continued to convey a portion of the blood, but below this part it had become simply a ligamentous chord. The internal iliac artery sent first a very large artery of communication to the epigastric and obturator artery, so that the epigastric was supplied with blood from the internal iliac: secondly, the internal iliac sent an artery of communication upon the sciatic nerve, to the internal circumflex artery. The gluteal artery gave a large branch to the origin of the profunda: lastly, the internal pudendal artery largely anastomosed with the obturator: the obturator, therefore, sprang in this case from two new sources, viz. from the internal iliac and from the internal pudendal artery, and the obturator, thus formed, sent two branches of communication to the internal circumflex artery. The arteria profunda was in this case supplied from two sources directly from the gluteal, and more indirectly from the internal circumflex by the obturator and ischiatic arteries. The external iliac artery was obliterated to the origin of the internal iliac, as other arteries usually are when ligatures are made upon them to the first large anastomosing vessel.* The principal agents then of the new circulation, are the gluteal artery with the external circumflex, the obturator artery with the internal circumflex, and the ischiatic with the arteria profunda; and the obturator artery is supplied with blood principally by the internal pudendal, when the obturator arises from the epigastric artery.

The iliac artery has now been so frequently tied for aneurism of the femoral artery at the groin, that no useful purpose can result from the narrative of a case of that kind, offering no uncommon circumstances. In Mr. Abernethy's works, and

* I have been informed that Mr. George Bell, of Edinburgh, has a preparation of a limb, in which he had divided the femoral artery for popliteal aneurism, and that the obliteration of the artery has not extended to the arteria profunda as usually happens.

in a book published by Mr. Freer, the first and best histories of this operation are given. But in the two following cases, the disease had proceeded to an extent to make the probability of success but small, and the result will show, that the operation may be successfully performed under the most adverse circumstances.

William Cowles, aged 37, came to London from Beccles, in Suffolk, on account of an aneurism in the right groin, which he attributed to his having walked five miles with a heavy burden upon his back, six months ago, and a fortnight before the appearance of the aneurism. Journeying to London upon the top of a coach, a distance of more than one hundred miles, he fell asleep upon his face, and pressing upon the tumour, he observed its surface changed to a gangrenous colour. When he was admitted into Guy's Hospital, the skin was purple in some parts, red in others, and extremely thin. It was obvious no time was to be lost, and the operation was performed upon the day of his admission, viz. the 22d of June, 1808, two ligatures were made upon the iliac artery, and the vessel divided between them.

Nothing unusual occurred until the 30th of June, at ten o'clock at night, when a discharge of dark coloured blood took place from the aneurismal sac, and the swelling became quite flaccid. I ordered a sponge dipped in vinegar and water to be applied upon the swelling.

In the six following days, the skin from the surface of the sac sloughed, so that the aneurismal cavity was completely opened. July the 8th the upper ligature separated, and on the 9th the lower came away.

The wound then looked well, the aneurismal sac granulated; but the man's health beginning to fail, it was necessary to remove him about a mile out of London, where he gradually recovered. This man, who now resides in the neighbourhood of Beccles, was in London this year, 1813, perfectly well.

CASE II.

April 30, 1813.

William Martin, aged 27, was admitted into Guy's Hospital under the care of Mr. Forster, for a fracture of the olecranon, and after having been in the hospital three weeks, he requested his dresser (Mr. Johnson) to examine a swelling in the left groin, which proved a femoral aneurism, seated at a small distance below Poupart's ligament, and the integument over it was in a mortified state, being of a dark colour, and having three vesicles upon its surface.

As it was thought that an operation was immediately necessary, and Mr. Forster was not at the hospital, I was requested to see him. The man said that the swelling had been growing nearly twelve months, and had a pulsation when he first observed it. He attributed its commencement to an attempt to raise $3\frac{1}{2}$ cwt. about three weeks before he first observed it.

The mortified state in which it was, he attributed to walking the distance of four miles, three days before it was shown to his dresser.

The tumour was as large as an orange; the pulsation in it very strong; its most projecting part was livid, and the surrounding parts of a deep red colour.

It appeared to me that no time was to be lost, and I immediately proceeded to tie the iliac artery. It may not be improper to remark, that the incision which I make for this purpose, is different from that usually advised: for I begin it just above the abdominal ring, and carry it half an inch above Poupart's ligament, in a semilunar direction, to one inch upon the inner side of the anterior and superior spinous process of the ilium.

Two ligatures were applied upon the artery, and the vessel divided between them.

The ligatures separated on the 17th day.

On the 23d day after the operation, an incision was made

into the aneurism, through the eschar, and the coagulated blood was discharged: the opening from the artery into the sac was very visible, but there was no bleeding from it.

The wound continued in a sloughy state for about three weeks, and then began to granulate; and although the restorative process went on slowly, the man was, after several weeks, discharged from the Hospital, completely cured, no lameness remaining.

Pathological Researches respecting the Diseases of Joints. By
B. C. BRODIE, Esq. F. R. S. Assistant Surgeon to St.
George's Hospital, and Lecturer on the Theory and Prac-
tice of Surgery.

[From the London Medico-Chirurgical Transactions for 1813.]

As the articulations of the human body are composed of various parts, each possessing its own peculiar anatomical structure, we cannot but suppose that they are subject to a variety of diseases. It is also reasonable to conclude, that these diseases may differ with respect to their causes and progress; that they may be attended with different degrees of danger to the affected organ, and that for each there may be certain remedies better adapted than others for its relief. Remarks so obvious cannot be regarded as original, yet I am not aware that any one has undertaken to investigate the subject with a view to make a classification of the morbid affections to which the joints are liable, and still less has it been attempted to point out the diagnostic marks by which they may be distinguished, and the methods of treatment which they respectively require. The terms white swelling, scrophulous joints, carious joints, &c. have been employed almost indiscriminately, and I believe it will be found, that the same name has often been applied to different maladies, and that the same malady has been spoken of under different appellations.

Yet no part of chirurgical science appears to be much more worthy of attention. The diseases of joints are of very frequent occurrence: some of them go on towards an unfavourable termination, in spite of whatever remedies are adopted; others are capable of being materially relieved or completely cured: they are all formidable if neglected. It is very desirable that we should be capable of forming such a distinction of these diseases, as may enable us to determine in what case a cure may, or may not be expected; and in the former, what applications or medicines may be employed in preference, and with the fairest prospect of advantage.

Perhaps nothing has contributed in so great a degree to the modern improvements in surgery, as the practice of examining the changes of anatomical structure which disease produces, particularly in those cases where there has been an opportunity of witnessing the previous progress and symptoms of the complaint. There seems to be no better foundation for a scientific arrangement of diseases, or for acquiring a knowledge of the characters by which they are to be distinguished; and the having ascertained in what the deviations from the natural actions of the animal body consist, is at any rate an important step towards understanding the method, by which such deviations are to be corrected.

If a joint be examined in the most advanced stage of a disease, all the parts composing it are found blended into a confused mass, in which it is impossible to distinguish the original nature and seat of the morbid action. It is only where an opportunity presents itself of making the dissection at an earlier period, that we are likely to procure that kind of information which is calculated to throw light on this subject. But such opportunities are of comparatively rare occurrence, since the joints are not vital organs, and the affections to which they are liable seldom prove fatal, or even require amputation, until they have made considerable progress; and this circumstance is, in itself, sufficient to form a very material obstacle to the improvement of this branch of pathology.

It is only by the successive labours of many individuals, that any part of a science so difficult and so obscure as those of medicine and surgery can be brought to a state at all approaching perfection: but this, instead of operating in a contrary manner, should rather form an inducement to each person, who possesses the means of gaining experience, to lay the results of his experience before the public; to bring them into the common stock, and contribute, as far as it is in his power, to the general improvement of his profession. The observations, which I have now the honour of presenting to the Society, are, for the most part, drawn from cases which have come under my notice within the last few years, in one of the principal hospitals of this metropolis. They relate to the pathological history, and classification of the diseases of joints. Should this communication be favourably received, I may, on a future occasion, venture to offer some additional remarks on the diagnostic symptoms by which these diseases may be distinguished, and the different methods of treatment which they require for their relief.

II.—*On the Inflammation of the Synovial Membranes.*

The soft parts which, added to the bones and cartilages, constitute the structure of the joints, are the synovial membrane, by which the lubricating fluid is secreted; the ligaments, by which the bones are connected to each other; and the fatty substance, which occupies what, in certain positions, would otherwise be empty spaces. It is to be supposed that the adipose membrane belonging to the joints may be inflamed; that it may be the seat of abscesses and tumours, as well as that which is situated beneath the skin, or in the interstices of the muscles; and the ligaments cannot be regarded as more exempt from disease than the fibrous membranes, which they very nearly resemble in their texture. The ligaments and the fat of joints are sometimes inflamed in consequence of mechanical injury; and I cannot say that I have never seen a case where disease, independently of this cause, has originat-

ed in them; but I certainly have met with no instance where it has been proved to have done so by dissection, and it may be safely asserted, that this is a rare occurrence, and not what happens in the ordinary affections to which the joints are liable.

On the other hand, no part of the body is much more frequently diseased than the synovial membranes. This is what their anatomical structure and their functions might lead us to expect, since we generally find, that living organs are more subject to have their natural actions deranged, in proportion as they are more vascular, and as they are employed in a greater degree in the process of secretion.

For a more particular account of the synovial membrane, I may refer to the authors who are quoted below.* At present it is sufficient to observe, that its office is to secrete the synovia, by which the motion of the joints is facilitated; that it lines the ligaments, by which the bones are held together; covers the bones themselves for a small extent, and thence passes over the cartilaginous surfaces and interarticular fat. Where it adheres to the bones and soft parts, it very much resembles the peritonæum in its structure, and possesses considerable vascularity; but where it is reflected over the cartilages it is thin and readily torn, and contains no vessels capable of carrying red blood:—its existence however, even here, may be always distinctly demonstrated by a careful dissection. The synovial membrane of a joint forms a bag having no external opening; in this respect resembling the peritonæum, the pleura, or the pericardium, which it also resembles in its functions, and to which it bears some analogy in its diseases.

Cases occasionally occur, in which a joint is swollen from a preternatural quantity of fluid collected in its cavity, without pain or inflammation. This may be supposed to arise, either from a diminished action of the absorbents, or an increased action of the secreting vessels. The disease may be compared

* Bichat. *Traité des Membranes*. See also Dr. William Hanker's Paper on the Structure of Cartilage, in the 42d vol. of the *Phil. Transactions*

to the dropsy of the peritonæum, or pleura, and it has not improperly been designated by the terms *hydrops articuli*.

It more frequently happens that there is swelling from fluid in the joint, with inflammation and pain. Here we may presume that the disease consists in an inflammation of the synovial membrane, with a consequent increase of the secretion from its surface; and this is confirmed by the appearances observed in those cases, in which an opportunity occurs of examining the affected parts after death.

In many instances, while there is still pain and inflammation in the joint, the fluid in its cavity is felt indistinctly, as if a considerable mass of soft substance lay over it. Often, when the inflammation has subsided, and the fluid is no longer to be felt, the joint remains swollen and stiff, painful when bent or extended beyond a certain point, and liable to a return of inflammation from slight causes. The appearances observed in the following cases, in which there was an opportunity of examining the effects which the disease had produced, seem to throw light on this subject.

CASE I.

A middle-aged man was admitted into St. George's Hospital, in September, 1810, on account of a disease in one knee. The joint was swollen and painful, with slight stiffness: fluid was felt in its cavity. The swelling extended some way up the anterior part of the thigh, behind the lower portion of the extensor muscles. It subsided under the use of blisters and liniments. Two months after his admission into the hospital, he was seized with a fever, apparently unconnected with the disease in the knee, of which he died.

On examining the affected joint, the synovial membrane was found much dilated, so that it extended up the anterior surface of the femur, behind the extensor muscles, at least an inch and a half higher than usual. Throughout the whole of its internal surface, except where it covered the cartilages, the

membrane was of a dark colour from inflammation; the vessels being as numerous, and as much distended with blood, as those of the tunica conjunctiva of the eye in a violent ophthalmia. At the upper and anterior part of the joint, a thin flake of coagulable lymph was effused from the inner surface of the synovial membrane, of the size of a half-crown piece. There was no other appearance of disease, except that, at the edge of one of the condyles of the femur, the cartilage adhered to the bone less firmly than usual.

CASE II.

A. B. a young man, in the spring of the year 1808, in consequence (as he supposed) of exposure to damp and cold, became affected with a painful swelling of one of his knees. Under the treatment employed by the practitioner whom he consulted, the pain and swelling, in good measure, but not entirely, subsided. Three months after the disease first took place, he was admitted into St. George's Hospital. At this time the knee was swollen, painful, and tender. The swelling had the form of the articulating ends of the bones. The leg was confined nearly to the straight position, and admitted of very little motion on the thigh. His general health was unaffected.

Blood was taken from the knee by cupping, and afterwards it was rubbed daily with mercurial ointment and camphor. Under this treatment the pain and inflammation subsided, and the swelling and stiffness were in some measure lessened. It afterwards became necessary to amputate the limb on account of another disease. The operation was performed on the 15th of December, 1808, and I did not neglect the opportunity of examining the joint.

The bones, cartilages, and ligaments were in a natural state. The synovial membrane was about one-eighth of an inch in thickness, and of a gristly texture. It was closely attached to the surrounding cellular membrane and fascia by means of

coagulable lymph, which had been formerly effused on its external surface.

These cases seem to explain the usual consequences of inflammation of the synovial membrane. It occasions, 1. a preternatural secretion of synovia; 2. effusion of coagulable lymph into the cavity of the joint; 3. in other cases, a thickening of the membrane, a conversion of it into a substance resembling gristle, and an effusion of coagulable lymph, and probably of serum into the cellular structure, by which it is connected to the external parts.

I have seen several cases, where, from the appearance of the joint, and the symptoms, there was every reason to believe that the inflammation had produced adhesions, more or less extensive, of the reflected folds of the membrane to each other; and I have observed, occasionally, adhesions in dissection, which may reasonably be supposed to have arisen from inflammation at some former period.

These effects of inflammation of the synovial, very much resemble those of inflammation of the serous membranes. There are, however, some points of difference. In the former, I have reason to believe, that suppuration rarely takes place independently of ulceration; but this is a frequent occurrence in the latter. Inflammation of the peritonæum, or pleura, though very slight in degree and of very short duration, terminates in the effusion of coagulable lymph; but it is only violent, or long continued inflammation, which has this termination in the membranes of joints.

The slight adhesion of the cartilage to the bone, in one of the cases which have been related, we must suppose to have proceeded from the greater disease in the synovial membrane. I shall have occasion hereafter to remark, that the same thing may be observed where the cartilage is about to ulcerate. I have known a few cases, in which there was extensive destruction of the cartilages of a joint, and which, from the previous history and symptoms, there could be no doubt was occasioned by neglected inflammation of the synovial mem-

brane. I believe, however, that this does not frequently occur, and that in most cases where the two diseases are combined, the ulceration of the cartilage is the primary affection, and the inflammation of the synovial membrane takes place subsequently, in consequence of the formation of an abscess in the cavity of the joint.

The inflammation of the synovial membrane is sometimes acute, but more frequently it assumes the chronic form, and then it is very often confounded with other more serious maladies, under the general appellation of white swelling. Perhaps nearly one half of the cases to which this term is applied are of this description. The disease takes place from various causes, but in most instances from the application of cold, which explains why it is more liable to occur in the superficial joints, such as the knee and ankle, than in the hip and shoulder, which are defended, by a thick mass of soft substance, from the influence of the external temperature. The disease may also arise from the use of mercury exhibited in too large quantities, or in particular constitutions; from rheumatism, and a generally debilitated state of the system. In these cases the inflammation is to be considered as a symptom of a constitutional complaint; often affecting several joints at the same time; leaving one joint to attack another; and it is for the most part less severe, and less disposed to terminate in the effusion of coagulable lymph and thickening of the membrane, than where it is entirely a local disease.

III.—*On Ulceration of the Synovial Membrane.*

When an abscess has formed in a joint, an ulcerated opening takes place in the synovial membrane, through which the matter is discharged. The following are the only cases, which have come under my observation, where ulceration of the synovial membrane has occurred as a primary affection. The most remarkable circumstance, which they demonstrate, is, that a disease, apparently slight, and of a part which is in no way concerned in the vital functions, should produce such a

degree of disturbance of the constitution as to occasion death. Of this however, they form, by no means, a solitary example; and every surgeon and physiologist will be able to call to mind numerous other instances, which show, that an impression upon a small part of the nervous system may derange, and ultimately destroy, the functions of the whole animal machine.

CASE III.

A young lady nine years of age, being at play, on the 1st of January 1808, fell and wrenched her hip. She experienced so little uneasiness, that she walked out, on that day, as usual. In the evening she went to a dance; but while there, was seized with a rigor, was carried home, and put to bed. Next morning she was much indisposed, and complained of pain in the thigh and knee. On the following day she had pain in the hip, and was very feverish. These symptoms continued; she became delirious, and she died, just a week from the time of the accident.

On inspecting the body, on the following day, the viscera of the thorax and abdomen were found in a perfectly healthy state. The hip joint, on the side of the injury, contained about half an ounce of dark-coloured pus; and the synovial membrane, where it was reflected over the neck of the femur, was destroyed by ulceration for about the extent of a shilling.

CASE IV.

A middle-aged man who had, a short time before, met with a contusion of the shoulder, was admitted into St. George's Hospital, in the winter of 1812. He complained of pain and tenderness in the shoulder, and a very slight degree of swelling was observable; but his principal disease was a fever resembling typhus in its character, of which he died in a few days after his admission.

On inspecting the body, about half an ounce of thin pus was

found in the shoulder-joint. The synovial membrane bore marks of general inflammation; and in one spot, where it was reflected over the neck of the os brachii, it was destroyed by ulceration for about the extent of a sixpence.

IV.—On cases in which the synovial membrane has undergone a morbid change of structure.

There are some diseases which consist simply in a morbid action; there are others in which the morbid action produces a morbid change of anatomical structure. Diseases, of the latter class, differ in their nature in different organs. Thus the tubercles which affect the lungs, in phthisis pulmonalis are never met with in the breast; and cancer, which is frequent in the breast, never attacks the lungs except by extending to them from the contiguous parts. The disease, which I am about to describe in the present section, consists in a morbid alteration of structure which takes place in the synovial membranes of joints, and which, as far as I have seen, is peculiar to these parts. I have never known an instance of the same disease in the serous membranes, which so nearly resemble the former in their nature and functions, nor even in the synovial membranes that constitute the bursæ mucosæ and sheaths of the tendons.

Some years since, in examining a diseased elbow, I found the cartilaginous surfaces completely destroyed by ulceration; an abscess had formed in the joint, and no remains were observable of the natural structure of the soft parts, these being everywhere converted into a pulpy substance, of a light brown colour, and about one-third of an inch in thickness. As the ravages of the disease were very extensive, it was impossible to determine, from the appearances on dissection, where the morbid action had originated. This case, however, differed materially from some others which I had met with, in which the destruction of the cartilages was not attended by any affection of the soft parts, similar to that which has been described. The following cases, which have since occurred,

furnish examples of the same disease in earlier stages of its progress, and show that it begins in the synovial membrane, and that the other parts become affected only in a secondary manner.

CASE V.

In a diseased knee, which was sent to me for examination by my friend Mr. Horn, Surgeon to the Newcastle Infirmary, I found, in the cavity of the joint, about four ounces of a pale yellow fluid, having flakes of coagulable lymph floating in it. The synovial membrane, where it formed the loose folds extending from one bone to the other, where it was reflected over the bones themselves, the crucial ligaments, and the fatty substance of the joint, had completely lost its natural appearance. It was converted into a pulpy substance, in most parts about one-fourth, but in some parts, nearly one-half of an inch in thickness, of a light brown colour, intersected by white membranous lines, and with red spots formed by small vessels injected with their own blood. The synovial membrane on the edge of the cartilaginous surfaces had undergone a similar change of structure, but only for a small extent. The semi-lunar cartilages were entire, but in a great measure concealed by the pulpy substance projecting over them. The cartilages covering the bones, in a few places, were in a state of incipient ulceration.

CASE VI.

Martha Manners, 26 years of age, was admitted into St. George's Hospital on the 6th of March, 1813, on account of a disease in her right knee.

She said that in June, 1811, she first observed the joint to be swollen and stiff; and from this time the swelling and stiffness increased; but in the first instance by very slow degrees. About Michaelmas, 1812, she caught cold, and the swelling

increased more rapidly, but it was not attended with any considerable quantity of pain.

At the time of her admission into the hospital, the right knee measured about two inches in circumference more than the left. The swelling was elastic; prominent at the upper and lower part of the joint, not having the form of the articulating ends of the bones. The joint admitted of motion, but the leg could not be completely bent or extended on the thigh.

Various remedies were employed without the smallest benefit. The stiffness of the joint increased. About the middle of May, she began to experience considerable pain, and soon afterwards an abscess presented itself by the side of the ligament of the patella, which was opened on the 15th of June. The orifice made by the lancet healed in a few days; but she continued to suffer severe pain; her health became much affected, and on the 6th of August the limb was removed by amputation.

On examining the joint, about an ounce of thick matter was found in its cavity. The ligaments were in a natural state. The synovial membrane had undergone precisely the same alteration as in the case which has been just related. The only point of difference that could be observed, was, that the *whole* of that portion of the membrane, which is reflected over the cartilages, had become affected, presenting the same appearance as elsewhere, but being thickened in a less degree. The cartilages had begun to ulcerate in a few spots; but the ulceration had made so little progress, that it might not have been noticed on a superficial inspection.

CASE VII.

Samuel Langford, 24 years of age, was admitted into St. George's Hospital on the 22d of April, 1812.

At the time of his admission one of his knees was swollen to nearly twice its natural size. The swelling was prominent on the anterior and lower part of the thigh. It was soft and elas-

tic; so that at first it appeared to contain fluid, but, on particular examination, the absence of fluid was ascertained, by the want of fluctuation. The leg was kept in the half bent state, and the joint admitted of only a very limited degree of motion. He had no pain, even when attempts were made to move the limb. The skin, over the diseased part, was of a pale colour, with some dilated veins ramifying in it. On each side of the joint, a small orifice was observed, through which the probe might be introduced into a sinus; but the sinuses appeared to be of small extent. His general health was unimpaired.

He said, that two years ago he first experienced some pain in the knee, but it was not sufficient to prevent his going about his usual occupations. Soon afterwards, the joint began to swell, and the enlargement gradually increased from that period. Several abscesses had formed at different times, but the greater number of them had healed.

About two months after his admission into the hospital, the limb was amputated.

On dissecting the diseased joint, the ligaments were found in a perfectly natural state. The whole synovial membrane, except where it was reflected over the cartilages, was converted into a pulpy, elastic substance, of a brown colour, intersected by white membranous lines, in some places half an inch in thickness, in others more; and in those parts where the membrane was reflected over the bones, near the borders of the cartilages, it was destroyed, in spots, by ulceration.

The semi-lunar cartilages were in a natural state, but in a great measure concealed, in consequence of their being enveloped in the mass of substance formed by the diseased synovial membrane.

The cartilaginous surfaces of the femur and patella were extensively, but not entirely, destroyed by ulceration; the ulceration being greatest towards the circumference. On the internal portion of the head of the tibia the cartilage was destroyed only for a very small extent, the ulceration being

entirely confined to the margin. On the external portion of the head of the tibia the cartilage was absorbed to a greater extent. The bones possessed their natural structure and hardness. The cavity of the joint contained matter, and the sinuses communicated with it.

CASE VIII.

Michael Purcel, 16 years of age, was admitted into St. George's Hospital on the 10th of July, 1811, on account of a disease in the right knee.

He said, that in the summer of 1807, he had received a blow on the inside of the joint. Some time afterwards a swelling formed and burst, and some fluid was discharged. In about a week the orifice healed; a slight degree of stiffness only remained, and he was able to follow his usual occupations. He continued well till December 1810, when the joint was observed to be increased in size. From this time the swelling increased, but with no other inconvenience than stiffness of the joint, and a slight degree of pain in walking.

At the time of his admission into the hospital, there was a large swelling of the knee, extending an inch or more up the anterior part of the thigh, under the extensor muscles. The swelling was more prominent in some parts, than in others: it was soft and elastic, and gave to the hand an indistinct sensation, as if it contained fluid. The leg was kept in the half-bent position, and was nearly immoveable on the thigh. He had no pain except on motion or pressure.

On the 28th of November, an abscess burst on the outside of the joint, and discharged a small quantity of pus. After this, other abscesses formed, and burst at various times. The swelling continued to increase.

Amputation was performed on the 6th of April.

On dissecting the amputated joint, all the ligaments were found in a natural state. The synovial membrane had precisely the same appearance as in the last case. In some parts

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it was half an inch, in other parts more than an inch, in thickness. The cartilages were for the most part destroyed by ulceration, and carious* surfaces of bone were exposed. The abscesses appeared to have formed in the substance of the synovial membrane, and did not communicate with the cavity of the joint, nor did the joint contain pus.

CASE IX.

A boy, six years of age, was admitted into St. George's Hospital, in March, 1808, on account of a disease in one knee.

The joint was larger than the natural size. The leg was bent at a right angle to the thigh, and admitted of no motion. The skin on the outside was ulcerated to a considerable extent. Various remedies having been employed without success, the limb was amputated on the 29th of April.

On examining the joint, the synovial membrane was found to have undergone a morbid change of structure, similar to that in the preceding cases, but with this difference; that the pulpy substance into which it was converted, projected into the joint, so as nearly to fill its cavity, and adhered to the cartilaginous surfaces. On making a longitudinal section of the joint, the cartilage covering the bones was seen, as a white line about one-tenth of an inch in thickness, connected to the bone on one side, and having the pulpy substance adhering to it on the other. It was, therefore, thinner than natural; but otherwise entire, except at the posterior part of one of the condyles of the femur, where it was destroyed by ulceration for a small extent. There were no distinct remains of the liga-

* In using the term caries, on this and on other occasions, I have considered it as synonymous with ulceration; or, at least, as expressing that state in bones, which corresponds to ulceration in soft parts. Some confusion has been produced in Pathological Nomenclature, in consequence of this term having been employed by some, to express, not only bone which is ulcerated, but that whose surface is exposed from other causes.

ments external to the joint, and only some small remains of the crucial ligaments and semilunar cartilages.

The preceding cases furnish examples of the same disease, in different stages of its progress. The morbid action evidently originates in the synovial membrane, which loses its natural organization, and becomes converted into a thick, pulpy substance, of a light brown colour, intersected by white membranous lines. As the disease advances, it involves all the parts of which the joint is composed, producing ulceration of the cartilages, caries of the bones, wasting of the ligaments, and abscesses in different places.

I have already remarked, that this disease is peculiar to the synovial membranes, at least that I have never met with it in any other part of the body; but it belongs to the same order with the tubercles of the lungs, the schirrus of the breast, the medullary sarcoma of the testicle, and numerous others, in which the natural structure of the affected organ is destroyed, and a new and different structure is added in its place. To these also it bears a near resemblance in its progress. Thus tubercles of the lungs, in the first instance, occupy the vesicular and interlobular substance; but, ultimately, they inflame and ulcerate; abscesses form in them, and then the pleura, the bronchia, and the other contiguous parts become affected. Similar circumstances mark the progress of other maladies of the same description.

In many other cases, in which, however, I had no opportunity of examining the morbid appearances, the similarity of the history and symptoms, and the resemblance in the form and elasticity of the tumour, has indicated the disease to have been of the same nature, as in those which have been related. The complaint uniformly has proved slow in its progress, and sometimes has remained nearly in an indolent state for many months, or even for one or two years; but I have never met with an instance, in which a real amendment was produced; much less have I known any, in which a cure was effected. Indeed there seems to be no analogy that should lead us to

expect so favourable a termination, as I am not aware, that a part that has once completely lost its natural structure, is capable, in any instance, of having that structure restored. The progress of this disease in a joint may be retarded by rest, by the occasional application of leeches, and the removal of those causes which are calculated to excite inflammation; but I have never known more than this to be done either by internal medicines or local remedies. When the cartilages are in a state of ulceration, and abscesses have formed in and about the joint, and the patient's health begins to suffer, it is needless to recommend any other treatment than the removal of the limb by amputation, and to delay this for any considerable time, can be attended with no benefit, and may produce much evil to the patient.

It is a remarkable circumstance, that this affection of the synovial membrane is rarely met with, except in the knee. I have never known an instance of it in the hip or shoulder. It is probable that the influence of the external cold may operate as one of the causes, by which the disease is produced, and this explains why it occurs frequently in the knee, and seldom in the deep seated articulations.*

It is evident from the history of cases in which a part of the living body assumes a new and morbid structure, that this alteration seldom takes place except by slow degrees: and it would add much to the interest and utility of researches in morbid anatomy, if it were more frequently attempted to ascertain what is the first change in the organization of the affected part which disease produces, and from thence to trace

* The account of the fungus articuli which has been given by some German writers, appears to have been drawn, partly from cases of the disease described in this section, partly from cases of inflammation of the synovial membrane. Mr. Russel seems to have taken his history of the pathology of white swelling from cases similar to those which have been related; but we must observe that the term, white swelling, has been applied, almost indiscriminately, to all the affections to which the joints are liable, and by no means confined to that under our present consideration.

the gradual progress of the changes which take place, until the destruction of the natural organization is completed. Whether the following case is to be considered as of the same kind with those already recorded in this section, but in an earlier stage of the disease, cannot at present be determined: but it appears not improbable that it is so; and I shall venture to relate it in this place, in the expectation that it may, at any rate, be of some service in assisting the investigations of future enquirers.

CASE X.

— Belton, a boy 11 years of age, was admitted into St. George's Hospital in August, 1810, on account of a disease in one knee.

There was but little pain in the joint; it was slightly enlarged, admitted of some motion, but not of complete flexion and extension. His parents said that the disease had begun about a year and a half before his admission into the hospital, that it had increased very slowly, and that he had never suffered from it any serious distress. Various remedies were employed without benefit, and in a short time his friends took him out of the hospital. A few weeks afterwards he died, in consequence of an accumulation of water in the ventricles of the brain.

I obtained permission to examine the body.

The synovial membrane of the affected knee, externally, had its natural appearance. Internally, it was lined by a straw-coloured gelatinous substance, so intimately adhering to it, that it could not be detached, except by an artificial separation. The synovial membrane was encrusted in this manner everywhere except on the cartilaginous surfaces. The gelatinous substance in general appeared about one-eighth of an inch in thickness, but in some parts near the borders of the cartilage, it was much thicker, so as to project considerably into the cavity of the joint. In a few places towards the margin of the

articulating surfaces, the cartilage had begun to ulcerate; in some of these it was entirely absorbed, so that the bone was exposed, but for the most part there was only an irregular ulcerated surface towards the cavity of the joint, the remaining portion of the cartilage being entire, and having its natural adhesion to the bone.

The synovial membrane itself bore no marks of inflammation. In the substance with which it was lined, some vessels were observed ramifying, beautifully injected with their own blood; but these were few in number and only in certain parts. This substance differed in appearance from the coagulable lymph, which is found on the surface of an inflamed membrane; and we may presume, therefore, that the effusion of it was the result, not of inflammation, but of some other morbid action.

V.—*On the Ulceration of the Cartilages of Joints.*

The cartilages of joints differ in some essential circumstances from those which are employed in other organs. The latter are more vascular, more liable to become inflamed; and inflammation in them usually terminates in the deposition of osseous matter. The articular cartilages in the adult possess no vessels capable of carrying red blood. Inflammation is not in them a frequent occurrence; when it does take place, it terminates in ulceration, and not in the formation of bone.

Ulceration of cartilage may be the consequence of inflammation of the cartilage itself, or of the bony surface to which it is connected; but in many instances there are no evident marks of inflammatory action having preceded it, either in one part or the other; and the inflammation which afterwards takes place appears to be rather the attendant on, than the cause of, the ulcerative process.

The ulceration of soft parts is usually, and as far as I know, always attended with the secretion of pus; but it is otherwise with the articular cartilages, in which suppuration seldom takes place, while the ulcer is small, and often the disease

proceeds so far, as to cause caries of the bones to a considerable extent without matter being formed in the joint. This circumstance is deserving of notice. It has been long established that suppuration may take place without ulceration; and it appears, that in this instance, ulceration may take place without the formation of pus.

In the cases, which have been related, the ulceration of the cartilages of the diseased joints was a secondary affection, the consequence of a morbid action originating in the neighbouring soft parts. There are other cases, and those not of rare occurrence, in which the ulceration of the articular cartilages exists as a primary disease.

When the ulceration of the cartilage occurs in the superficial joints, it constitutes one of the diseases, which have been known by the name of white swelling. From cases, which I have met with, I am led to conclude, that when it takes place in the hip, it is this disease, which has been variously designated by writers, the "*Morbus Coxarius*," the "Disease of the Hip," the "Scrophulous Hip," the "Scrophulous Caries of the Hip-joint." At least it is to this disease that these names have been principally applied, though, probably, other morbid affections have been occasionally confounded with it.

CASE XI.

In examining a body, brought into the dissecting room in Windmill Street, I found the cartilage in a diseased state in the joints of both hips, of one of the knees, and of both elbows. In some spots, the cartilages of these joints were altogether destroyed by ulceration, and carious surfaces of bone were exposed; in others the cartilage was not completely absorbed, but it had the appearance of fibres, which were connected at one extremity to the bone, while the other extremity was loose towards the cavity of the joint, and having no lateral connection with each other. The intervertebral cartilages connecting

the bodies of some of the dorsal vertebrae were also in a diseased state. They retained the usual appearance of concentric layers towards the circumference, but in the centre, instead of the white semi-fluid substance, which is met with under ordinary circumstances, they were found to be of a brown colour, of a solid and somewhat brittle texture, composed of several portions having a very slight adhesion to each other. The ligaments, the synovial membranes, and the bones, were all in a natural state, except that the latter were occasionally carious in consequence of the absorption of the cartilage; but the caries was unattended by the formation of matter.

In this case the original disease appears to have been a morbid state and subsequent ulceration of the cartilages. It shows, that where the disposition to it exists, the destruction of the cartilage may take place in several joints at the same time, and I have observed the same thing in many other instances.

The conversion of the cartilage into a soft fibrous structure, I am disposed to believe, is the frequent, though not the constant, forerunner of ulceration. In a woman, who died a week after a severe contusion of the hip, the cartilage of the head of the femur was found in some parts entirely absorbed, in others having a fibrous appearance similar to what has been described, and I have noticed the same circumstance in other cases, sometimes connected with, and sometimes independent of, local injury.

CASE XII.

In another body, which had been brought into the dissecting room, the nates on one side were wasted, and flattened in their form, having the appearance which they assume in the ordinary cases of disease in the hip-joint: and this was very distinct, so that it was observed by the students, as well as by myself, and it led me to examine the hip-joint on that side.

The capsular and round ligaments, the synovial mem-

branes, the fatty substance of the joint, and the bones were all in a perfectly natural state. The cartilage covering the head of the femur, for the extent of a sixpence on one side of the round ligament, was partially absorbed, and what remained of it converted into a fibrous structure, similar to what was observed in the last case.

This dissection might lead to the suspicion that the first stage of the ordinary disease of the hip joint, consists in an absorption of the cartilage from one, or both of the bones composing it; at the same time, no positive conclusion can be drawn from it, since the same appearance of the nates is produced occasionally from other causes, and I had no opportunity of learning what other symptoms had existed previous to death.

CASE XIII.

A boy ten years of age was admitted into St. George's Hospital in April, 1809, on account of a disease of the left hip. The nates were wasted, and flattened; there was pain in the hip and knee, and a large abscess had formed, which produced a tumour on the outside of the thigh. An issue was made with caustic behind the great trochanter. About a month after his admission, the skin over the abscess having become inflamed, I made an opening in it with a lancet, and half a pint of pus was evacuated. The orifice, made by the lancet, healed by the first intention, but in a few days, pus was again collected in the abscess, and the tumour was larger and more tense than ever. The limb became shortened; the abscess burst externally; the boy became affected with hectic symptoms, and died on the 21st of October.

On examining the body, the abscess was found communicating with the cavity of the left hip. The capsular ligament, and synovial membrane, were not distinguished from the other soft parts, forming the parietes of the abscess. There was no vestige of the round ligament, and no remains of car-

tilage on either of the bones composing the joint. The head of the femur was reduced by caries to about one half of its natural size, and from the same cause, the acetabulum was rendered deeper and wider than is natural. At the posterior part, the margin of the acetabulum was more extensively absorbed, and the head of the femur had been drawn out of its cavity, and was lodged on the dorsum of the ilium.

No other disease had been suspected to exist during life. If the boy had ever complained of pain in the right hip, the circumstance had been overlooked, on account of the greater disease in that of the opposite side. Having accidentally cut into the joint of the right hip, I found the cartilage, covering the head of the femur, absorbed for about one-third of its extent, and the surface of bone which was in consequence exposed, was covered by a thin layer of coagulable lymph. The cartilage lining the acetabulum, and all the soft parts belonging to the joint, were in a perfectly natural state, and the bones were of the ordinary texture and hardness.

CASE XIV.

A girl, seven years of age, was admitted into St. George's Hospital in May, 1809, on account of a complaint in the left hip. She had pain in the knee, the limb was shorter than is natural, and the nates were wasted and flattened. An issue was made with caustic behind the great trochanter. Soon after her admission an abscess burst near the crista of the ilium. The disease in the hip appeared to be considerably relieved, but on the first of August she died of an accidental attack of erysipelas.

On inspecting the body, the glutæi muscles of the left side were found wasted, and of a dark colour. A sinus extended from the external orifice of the abscess through the soft parts, and communicated with the hip joint, by an ulcerated opening in the margin of the acetabulum.

There were no remains of cartilage on the surface of the

acetabulum. The exposed bone was in a carious state, and of a dark colour, and the cavity of the acetabulum was rendered deeper and wider than is usual. The greater part of the cartilage was destroyed on the head of the femur, and the small portion of it which remained, was readily separated from the bone. This circumstance is often met with where cartilage is undergoing the process of ulceration.

The capsular ligament was somewhat thicker than under natural circumstances, and more connected with the surrounding parts. There were no remains of the round ligament.

In the anterior part of the joint, a quantity of organized soft substance, resembling that of adhesions, was interposed between the head of the femur and the acetabulum, and behind this was a collection of dark-coloured pus. From these two causes the head of the femur had been separated from the os innominatum, and pushed outwards, and it had afterwards been drawn upwards by the action of the muscles, so that it was lodged on the superior part of the bony margin of the acetabulum. The synovial membrane was of a dark colour, but not otherwise diseased.

On examining the hip of the opposite side, I found the soft parts external to it, the capsular ligament, synovial membrane, and fatty substance of the joint, having no appearance of disease. The cavity of the joint contained about a drachm of dark-coloured pus. The cartilage was absorbed from about one-third of the surface of the acetabulum, but the exposed bone presented no appearance of caries. In some parts of the head of the femur, the cartilage had a fibrous appearance, similar to what has been already described; in other parts it was entirely absorbed, and a carious surface of bone was exposed; and elsewhere it was in a natural state. The round ligament was ruptured by a very slight degree of force, which seemed to arise from the cartilage having been destroyed round its insertion into the acetabulum.

The bones in the neighbourhood of the carious surfaces of the left hip were of a darker colour than usual; but no such

appearance was observed in the bones of the other hip, which were in all respects in a healthy state.

CASE XV.

William Bridges, 21 years of age, was admitted into St. George's Hospital, on the 28th of November, 1810. He gave the following account of his complaint. About the middle of the May preceding he first experienced a pain in the right knee, which was aggravated by walking. At the end of a month, the pain became so severe that he was under the necessity of being confined to his bed. He had slight pain in the hip; but that in the knee was intense, keeping him awake at night. An abscess formed, which in the September following burst on the inside of the thigh.

At the time of his admission, the oses were wasted and flattened; the limb on the affected side was an inch and a half longer than the other; there was a large abscess in the posterior part of the thigh. He was emaciated, and laboured under a hectic fever. An issue was made with caustic behind the great trochanter of the femur, and afterwards a second issue was made in the same manner on the anterior edge of the tensor vaginæ femoris muscle. Under this treatment he experienced for a time great relief, notwithstanding several abscesses burst in different parts of the thigh. He became free from pain; regained his flesh; the hectic fever abated; and the discharge from the abscesses was much lessened. The limb now appeared to be shorter than the other. He continued to mend, till the middle of February, 1811. At this period, the former bad symptoms began to return. He was affected with a constant diarrhoea, and profuse perspirations, and he died on the 30th of March following.

On inspecting the body, the glotæi muscles were found wasted and shrunk, and in many parts their texture was destroyed by the abscesses, which communicated with the cavity of the joint by two ulcerated openings, one on the anterior,

and the other on the posterior part. The abscesses formed several sinuses in the neighbourhood of the joint, and the capsular ligament was in consequence connected to, and in some measure blended with, the other soft parts.

The joint contained purulent matter. The synovial membrane was darker than natural, but otherwise had the ordinary appearance. There were no remains of the round ligament. The cartilages were everywhere absorbed, and the exposed surfaces of bone were in a carious state. The head of the femur was reduced to about two-thirds of its original size, and the acetabulum was rendered deeper and wider, nearly in the same proportion. At the bottom of the acetabulum there was an ulcerated opening, just large enough to admit a common probe, communicating with an abscess within the pelvis. The carious surfaces of the bones had the same dark colour and fœtid smell as in other cases of caries, but otherwise they did not differ from healthy bones.

I could add to the foregoing an account of the dissection of several other cases, in which the hip was affected with the same disease, but it would be only unnecessarily occupying the time of the Society. It will be sufficient to observe, that,

1. In the most advanced stage of the disease, none of the parts entering into the composition of the joint retain their natural structure. The soft parts are blended into a confused mass. Sometimes the head of the femur is completely destroyed by the caries, and there remains only the neck, or a part of the neck, of the bone. Often the projecting margin of the acetabulum is entirely absorbed, so that, instead of a cavity, there is only a broad carious surface of the os innominatum. In a few instances, a portion of the carious bone is found dead, and undergoing the process of exfoliation, or having already exfoliated into the cavity of the joint.

2. In whatever period of the disease the examination is made, the cartilages are found in a state of ulceration; but the morbid affection of the soft parts and bones varies very much,

nor are they much altered from their natural state, except in the most advanced stage of the malady.

From these circumstances, from the presumptive evidence afforded by the sixth Case, and from the appearances in the two following, in which, while the disease had made considerable ravages in one hip, it was in an incipient stage, and wholly confined to the cartilages in the other, we may be justified in concluding, that, in the ordinary cases of caries of the hip, the cartilage is the part primarily affected, and the following may be stated to be the progress of the disease.

1. Ulceration takes place in the cartilages: generally in that of the acetabulum first, and in that of the head of the femur afterwards; sometimes it begins in both at the same time.

2. The ulceration extends to the bones, which become carious; the head of the femur is diminished in size, and the acetabulum is rendered deeper and wider.

3. Abscess forms in the joint; which, after some time, makes its way, by ulceration, through the synovial membrane and capsular ligament, into the thigh or nates, or even through the bottom of the acetabulum into the pelvis. Mr. Astley Cooper has shown me two specimens, in each of which the abscess had burst into the rectum.

4. In consequence of the abscess, the synovial membrane and capsular ligament become inflamed and thickened. The muscles are altered in structure; sinuses are formed in various parts, and at last, all the soft parts are blended together into one confused mass, resembling the parietes of an ordinary abscess.

In giving this statement, it cannot be intended to assert, that the hip is not liable to other morbid affections; and, of course, disease having its origin in the bones or soft parts, may ultimately occasion destruction of the cartilaginous surfaces in this as well as in other joints; but still the conclusion remains, that in the ordinary disease of the hip joint, in that disease which an intelligent surgeon, in a work written expressly on the subject, has denominated "the scrophulous

caries of the hip," the ulceration of the cartilages is the primary affection, and the other parts, in and near the joint, become affected only in a secondary manner.

The appearances observed on dissection explain some of the symptoms by which the existence of this disease is indicated.

1. The glutæi muscles, from want of use, gradually become wasted and flabby. The nates, in consequence, are less prominent than is natural, and this gives them the appearance of being increased in breadth, when, on measurement, no such increase is found to exist.* In some instances even, the nates, on a superficial examination, appear to the eye to be wider than natural, when they are in fact narrower, in consequence of the bones composing the hip having been in part destroyed by ulceration. There are, however, a few cases, where, from the acetabulum being filled with coagulable lymph and matter, the head of the femur is pushed out of its proper situation, and the increased breadth of the nates is not only apparent but real.

2. When the disease is in its most advanced stage, the head of the femur is sometimes completely destroyed, and the muscles pull the great trochanter upwards towards the crista of the ilium. This may be compared to the fracture of the neck of the femur, and the appearance of the limb is the same as after this injury. The toes are generally turned outwards, and the limb is shortened. It sometimes happens that the limb is shortened, the thigh bent forwards, the toes turned inwards, and there is every symptom existing of a dislocation of the hip, upwards and outwards. The following case fully explains the cause of these appearances.

* This alteration in the form of the nates is a symptom, but is not to be considered as a diagnostic mark of disease in the hip joint, since it may be observed in other cases, where from any cause the glutæi muscles have been for a considerable time in a state of inaction. Thus, children are subject to a paralytic state of the muscles of the lower limbs, and in this complaint, if the muscles are affected as high as the pelvis, the nates present to the eye precisely that appearance, which is described above. The difference of the other symptoms enables us to distinguish the two diseases.

CASE XVI.

— Taylor, a middle-aged man, was admitted into St. George's Hospital, in the autumn of 1805, on account of a disease in his left hip. He laboured also under other complaints, and he died in the February following.

On inspecting the body, the soft parts in the neighbourhood of the joint were found slightly inflamed, and coagulable lymph had been effused into the cellular membrane round the capsular ligament.

There were no remains of the round ligament.

The cartilages had been destroyed by ulceration, except in a few spots.

The bones on the exposed surfaces were carious; but they retained their natural form and size. The acetabulum was almost completely filled with pus and coagulable lymph: the latter adhering to the carious bone, and having become highly vascular. The head of the femur was lodged on the dorsum of the ilium. The capsular ligament and synovial membrane were much dilated, and at the superior part, their attachment to the bone was thrust upwards, so that although the head of the femur was no longer in the acetabulum, it was still within the cavity of the joint.

Since the man did not attribute this disease to any local injury, we may conclude that the ulceration of the cartilage was the primary affection, and that the dislocation had been produced, in consequence of the head of the femur having been first pushed outwards by the coagulable lymph and pus, which occupied the cavity of the joint, and then drawn upwards by the action of the muscles inserted into the great trochanter.

As, from the peculiar situation and connections of the hip, affections of this part are attended with particularly serious consequences, I trust that the foregoing descriptions will not be considered as given too much in detail, especially as it will prevent the necessity of entering with much minuteness into

the history of the ulceration of the cartilages of other joints, in which the progress of the disease, allowance being made for the difference of structure and situation, is the same as in the hip.

CASE XVII.

David Martin, 26 years of age, was admitted into St. George's Hospital on the 25th of July, 1810, on account of a disease in his right knee. He attributed it to a blow which he had received some years previous; but he said, that the symptoms had all been much aggravated within the last six months. At the time of his admission into the hospital, the knee had the appearance of being swollen; but on examination, this was found to arise from the wasting of the muscles, rather than from actual enlargement. The leg was fixed, or nearly so, in the half bent position. The condyles of the femur projected beyond the head of the tibia. He complained of pain, which was particularly severe at night.

An issue was made with caustic on each side of the patella; but the symptoms were not relieved, and an abscess burst on the outside of the joint, discharging a large quantity of matter.

Soon after his admission, he experienced, for the first time, severe pain in the other knee; but this was unattended by swelling, or any alteration in the form of the joint, and the leg admitted of complete extension and flexion on the thigh. The pain continued, but no swelling ever took place.

In the beginning of September, he was seized with an accidental attack of erysipelas. Abscesses formed in different parts of the leg and thigh; and he gradually sunk, and died on the 7th of November.

On inspecting the body, the right leg was found bent so as to form a right angle with the thigh. The head of the tibia had been drawn towards the ham by the action of the flexor muscles, so that the condyles of the femur were unusually protuberant. The lateral ligaments were in a natural state.

There were no remains of the crucial ligaments, or semilunar cartilages. The cartilages of the tibia, femur, and patella had been entirely absorbed. The bones were carious on their exposed surfaces, but not otherwise diseased. The synovial membrane was free from all morbid appearances, except at the points of its attachment to the bones, where, in a few places, coagulable lymph had been effused on its surface.

The left knee, externally, had its natural appearance with respect both to form and size. The leg admitted of complete flexion and extension. On dissection, the ligaments and synovial membrane were found in a perfectly healthy state; but about one third of the cartilaginous surfaces of the tibia and femur were destroyed by ulceration, the ulceration having taken place principally, but not entirely, near the circumference. The cartilage of the patella and semilunar cartilages were entire, but the latter, in some parts, were softer than usual. The bones were free from disease. There was no pus or other fluid in the joint.

The dissection of this case, in which the ulceration of the cartilaginous surfaces was evidently the primary disease, explains well the nature of, at least, many cases of that species of white swelling, which some authors have described, in which there is long continued and severe pain in the joint, before any tumour is observable.

CASE XVIII.

William Bowles, 18 years of age, was admitted into St. George's Hospital on the 1st of December, 1810. He said, that about eleven months previous to his admission, he was seized with pain in his right knee, which was so severe as to keep him frequently awake at night. Six weeks after the pain attacked him, the joint, for the first time, became swollen. He now applied to a practitioner, under whose treatment, joined with perfect rest, the pain and swelling subsided, so that he was able to walk about. In the September following, having

returned to his usual occupations, and used the joint a good deal, the pain and swelling returned.

At the time of his admission the affected knee was about one inch and a half in circumference larger than the other. The swelling had the form of the articulating ends of the bones. The leg was half bent, and all attempts to give it motion gave great uneasiness. The pain which he experienced, was great at all times, but particularly at night, when it very much disturbed his rest.

Soon after his admission, an abscess was discovered on the outside of the knee, which burst in the beginning of February, and discharged a large quantity of matter. On the 18th of March, the limb was removed by amputation.

On examining the joint, the greater part of the cartilaginous surfaces of the tibia, femur, and patella were found destroyed by ulceration. Where the cartilage was destroyed, the exposed bone was carious, and in some places covered by a thin layer of coagulable lymph; but in other respects, the bone was free from disease. There were scarcely any remains of the semi-lunar cartilages. The joint contained pus, and the abscess in the joint had made its way into the external parts, through an ulcerated opening in the synovial membrane. The synovial membrane was in a natural state, except that, in a few places, there was a thin layer of coagulable lymph on its surface, which, evidently, had been recently effused. The external lateral ligament was destroyed by the abscess: the other ligaments were entire.

In this case, the principal disease observed in the dissection, was the ulcerated state of the cartilages. There was no affection of the synovial membrane beyond what might be considered as arising from the formation of pus in the joint, and the bursting of the abscess externally. Where inflammation of this membrane is the primary disease, swelling takes place often in a few hours, always within two or three days from the beginning of the attack; whereas, in this instance, the constant answer, which the patient gave to the repeated en-

quiries made of him, was, that he had had violent pain for six weeks before the joint was observed to be enlarged. From all these circumstances, we may conclude, that in this case, as well as in the last, the cartilages were the original seat of the disease, and that the morbid appearances observed in the soft parts were the consequence of the formation of the abscess in the joint.

CASE XIX.

Jane Bannister, 40 years of age, was admitted into St. George's Hospital in September, 1810, on account of a disease in her right foot. She gave the following account of her case.

In the September of the preceding year, she wrenched her instep, and soon afterwards experienced violent pain in this part, so that she was unable to stand on the foot, and her rest was much disturbed at night. The pain continued very severe, and at the end of four months, she observed, for the first time, a slight swelling on the inside of the foot. This was occasioned by an abscess, which was opened by her medical attendant in the April following.

At the time of her admission into the hospital, the whole foot was swollen, and she complained of violent pain in it. The abscess continued open, discharging a small quantity of pus. On introducing a probe into the orifice, an exposed surface of bone was felt. Several applications were made without benefit, and the leg was amputated on the 25th of February, 1811.

On examining the amputated foot, the cartilages of the joint formed by the astragalus and os naviculare were found destroyed by ulceration, and a portion of the astragalus was dead, and undergoing the process of exfoliation. The cartilages of the joints formed by the cuneiform bones with each other, with the os naviculare, and with the metatarsal bones, were in like manner destroyed, and the exposed surfaces of

bone were carious. The abscess communicated with the carious joints. The ligaments and synovial membrane were in a natural state, except in a few spots, where they were destroyed by the abscess. The bones possessed their natural texture and hardness. The cellular membrane of the foot contained coagulable lymph and serum.

From the previous history, as well as from the appearances on dissection, there can be as little doubt in this case as in either of the two preceding, that the original disease was the ulceration of the cartilaginous surfaces, and that the other parts were affected only in a secondary manner.

It would be needless to add to the foregoing, an account of other cases, in which the disease was in a still more advanced stage. The progress of it in other joints, corresponds with that in the hip, and whatever may be the joint affected, there is ultimately the same complete destruction of the cartilages, and the same extensive ravages are committed among the bones and soft parts.

In one of the cases related in this section, where ulceration of the cartilages had begun in several other joints, those between the bodies of some of the dorsal vertebræ were very much altered from their natural structure; and this circumstance rendered it probable, that in the ordinary cases of caries of the spine, the disease has its origin in the intervertebral substance, and that it corresponds to the ulceration of the cartilage in other joints. In cases of this disease, which I have examined after death, the appearances have tended to confirm this conclusion, as I have found the destruction of the intervertebral cartilages to be greater than that of the vertebræ themselves, and the caries of the last has been either entirely confined to, or most extensive on, those surfaces, to which the cartilages had been connected. The following case, which came under the observation of Mr. Howship, and the particulars of which he communicated to me, appears to complete the evidence on this subject.

CASE XX.

Christiana Clear, a girl eight years of age, was admitted into the Infirmary of St. George's parish, in the year 1808, on account of a disease of the spine. At this time the upper part of the spine was bent forward, and the spinous processes of some of the dorsal vertebræ, formed a preternatural projection at the posterior part; but still she was able to walk without assistance.

Soon after her admission, an abscess formed and burst in the groin; and this was followed by a second which burst near the former.

The child was now forced to be confined entirely to her bed. The abscesses continued to discharge pus. She became affected with hectic fever; nevertheless more than two years elapsed, from the time of her having been first admitted into the infirmary, before she died.

On inspecting the body, it was found to be universally anasarcaous. The abdominal muscles were so wasted that scarcely any vestige of them was observable. This, probably, arose from the child having remained in bed for so long a period previous to her death, and having scarcely ever varied her position.

At the posterior part of the abdomen, there was a confused mass of soft substance, which proved to be the parietes of an abscess communicating with the orifices in the groin.

The bodies of the lowest dorsal, and three superior lumbar vertebræ were found at the posterior part of the abscess, nearly consumed by the caries.

There were no remains of the intervertebral cartilage between the tenth and eleventh dorsal, nor of that between the third and fourth lumbar vertebræ. These intervertebral spaces were filled with pus, and the opposite surfaces of the vertebræ were carious, but only in a slight degree. The central part of the intervertebral cartilage, between the bodies of the ninth and tenth dorsal vertebræ, was completely absorbed, and pus

was found in its place. Externally to this abscess, the concentric layers of elastic cartilage were entire, though somewhat altered from their natural appearance.

The case just related, and the circumstances before mentioned, seem to warrant the conclusion, that, in the ordinary cases of caries of the spine, the disease is, originally, an ulceration and abscess of one or more of the intervertebral cartilages, beginning in the centre, and extending to the circumference, and afterwards affecting the bodies of the contiguous vertebræ.*

After stating these facts, it is however proper to mention, that I have examined some cases, in which the spine was carious, and in which the bodies of the vertebræ were extensively destroyed, while the intervertebral cartilages were very little, or not at all affected: but in all cases of this kind, which have come under my observation, the caries was evidently not the original affection, but the consequence of some other disease external to the spine. Thus, where an abscess has formed in the psoas muscle, or in the cellular membrane, which surrounds it, the matter resting on the vertebræ occasions caries of the bones, but not of the cartilages between them; so that in some instances, where the disease has been of long continuance, the former have been found extensively destroyed, while the latter have remained projecting, almost of their natural size.

* Mr. Pott, in his treatise on the disease of the spine, speaks of it as showing itself in a variety of forms, "sometimes in that of a thickened state of the ligaments," "sometimes in that of a distempered state of the intervertebral cartilages," "sometimes in that of diseased glands;" &c. There can be no doubt that the spine is subject to many morbid affections; but I believe it will be found that the symptoms described by Mr. Pott, attended with a curvature of the spine forwards, and projection of the spinous processes backwards, are produced only by the disease described above, and that it is this disease only, which is relieved by the method of treatment which he has recommended. The lateral curvature of the spine is a different affection, being, in general, the consequence of a soft or rickety state of the bones.

In some cases, the ulceration of the cartilage of a joint begins on that surface, which is connected to the bone; and from having observed this circumstance, I was at first led to adopt an opinion which I heard stated to have been that of Mr. Hunter, and which appeared to be warranted by the small degree of vascularity which cartilage possesses, that ulceration of it takes place, not from the action of its own vessels, but in consequence of it being acted on by the vessels of the bone, to which it is connected. I afterwards found, that in many instances, previously to ulceration, the cartilage undergoes a remarkable change of texture, becoming soft, and assuming a fibrous appearance; thence I was led to conclude, that this opinion is not altogether correct; and I now am able to adduce the two following cases, which seem to prove that cartilage, as well as other parts, is capable of ulcerating from the action of its own vessels.

CASE XXI.

A boy, 12 years of age, on the 28th of June, 1809, fell from a height, and pitched on one of his knees. When he was brought to the hospital, he was found to have a compound fracture of the femur. For some days he appeared to go on well, but afterwards an abscess formed in the thigh extending as high as the nates; and he sunk and died on the 21st of July. On examining the knee joint after death, the cartilage covering the condyles of the femur, and that covering the head of the tibia was found, in some parts, entirely absorbed, so that the bone was exposed; and in other parts it was absorbed on the surface towards the cavity of the joint, while the layer of it next to the bone retained its natural adhesion, and its natural structure. The cartilage, in these parts, was formed into grooves, having an appearance as if the greater portion of its substance had been removed with a chissel.

CASE XXII.

A middle-aged man met with an injury of the knee, which was followed by inflammation and suppuration, and he died in St. George's Hospital, on the 30th of August, 1809.

On examining the joint after death, the cartilage covering the condyles of the femur, and the head of the tibia, was found entirely destroyed towards the circumference, so that the bone was exposed. Elsewhere, only a thin layer of cartilage remained; but this had its ordinary texture, and adhered as firmly as usual to the bone.

As in these cases the cartilage was absorbed on the surface towards the cavity of the joint, while the remainder still adhered to the bone, it is evident that the absorption must have taken place from the vessels of the cartilage itself.

In young persons, before the period of growth is over, the articular cartilages possess more vascularity than in others, so that their vessels are distinctly to be seen, and admit of being injected, which is not the case in adults; and this explains why the ulceration of the cartilage takes place more frequently, and makes more rapid progress in the former than in the latter.

When the disease, which has been described in this present section, has made very considerable progress, if the patient recovers so as to preserve the limb, he seldom has the use of the joint afterwards, the bones composing it being united by ankylosis; but if it has been checked in a less advanced stage, even though the whole of the cartilages have been destroyed, the patient may retain the natural motion of the joint. In these cases, I have no reason to believe that there is ever any attempt at the regeneration of the cartilage. In some instances a smooth, compact layer of bone is formed on the carious surface, nearly similar to what is seen in a healthy bone, after the cartilage is destroyed by maceration. I have many times, in dissection,

observed a considerable portion of the cartilage of a joint wanting, and in its place a thin layer of hard, compact, semi-transparent substance, having an irregular granulated surface. It is probable, that in these cases the original disease had been ulceration of the cartilage. In a subject in the dissecting room, I found no remains of cartilage on the bones of one hip, but in its place, a crust of bony matter was formed, of a compact texture, of a white colour, smooth, and having an appearance not very unlike that of marble. I suspected this also to have been a case, in which the patient had recovered after ulceration of the cartilage, and this opinion was rendered more probable by the following case which afterwards occurred.

CASE XXIII.

A woman, 36 years of age, was admitted into St. George's Hospital, with pain in the hip and knee on one side. The nates were wasted and flattened, and a large abscess had burst, leaving a sinus communicating with the hip joint. She was affected with hectic fever, and she gradually sunk and died. On inspecting the body, various sinuses were found in the neighbourhood of the hip, and communicating with it.

The synovial membrane and capsular ligament had undergone no alteration in their appearance, beyond what evidently depended on the abscess. The cartilage was every where absorbed from the articulating surfaces, and in its place, there was a white polished surface, similar to that which has been just described.

VI.—*On the Scrophulous Affection of the Joints.*

The term scrophula is often employed without much precision, and indeed it is not always easy to determine what symptoms ought, and what ought not, to be referred to this disease. It has been usual to regard nearly all the affections of joints as scrophulous, and I believe it may be found, that per-

sons having a predisposition to scrophula are, on the whole, more liable than others to those affections which form the subject of the preceding sections. As, however, they occur very frequently, where no such predisposition exists, there seem to be no sufficient grounds for considering them as having any necessary connection with it; and it can be no more proper to designate these as scrophulous, than it would be to denominate inflammation of the synovial membrane a mercurial disease, because it occasionally arises from the use of mercury. But there is another malady which affects the joints, having all the characters of scrophula; occurring only in persons having a scrophulous appearance, and usually preceded by, or combined with, other scrophulous symptoms.

In the scrophulous disease of the joints, the bones are primarily affected, in consequence of which ulceration takes place in the cartilages covering their articulating extremities. The cartilages being ulcerated, the subsequent progress of the disease is the same as where this ulceration takes place in the first instance.

CASE XXIV.

Charles Miller, twenty years of age, having blue eyes, light hair, and a fair complexion, was admitted into St. George's Hospital, in April, 1808, on account of a disease in one foot. The whole foot was swollen and œdematous, with two fistulous sinuses, one on the inside and the other on the outside, through which a small quantity of scrophulous matter was discharged. A probe being introduced into either of these sinuses, some exposed pieces of bone might be distinguished.

On the 16th of May, the limb was amputated below the knee.

On examining the amputated foot, the muscles were found pale and wasted from want of use, and the cellular membrane was distended with serum and coagulable lymph.

The extremities of the tibia and fibula, all the bones of the

tarsus, and the extremities of the bones of the metatarsus, contained much less earthy matter than is usual. They were so soft that they might be cut with a scalpel, without the edge of it being turned. They were preternaturally red and vascular, and a yellow cheesy substance was deposited in the cancelli. The cartilage at the base of the fifth metatarsal bone was destroyed by ulceration. Those at the bases of the three middle metatarsal bones were also destroyed, and the exposed surfaces of bone were dead, and undergoing the process of exfoliation. The cartilages of all the other bones were in a natural state. Pus and coagulable lymph was effused in the neighbourhood of the dead and carious bones; and the sinuses communicated with them. The synovial membrane and ligaments were in a natural state, except where destroyed by the abscesses.

CASE XXV.

John King, 26 years of age, having blue eyes, thick lips, and a florid complexion, was admitted into St. George's Hospital, on the 1st of June, 1811, on account of a complaint in his right ankle and foot. I received the following account of his case, partly from himself, and partly from a medical gentleman, who was in the habit of seeing him before he came into the hospital.

About the end of May, 1810, he wrenched his foot. The instep and ankle became swollen and painful, but in a few days these symptoms subsided. During the summer he experienced slight pain and weakness of these parts whenever he took more than his usual quantity of exercise; but in October a slight tumefaction was observed on each side of the ankle, and the pain was more severe, but still not sufficient to prevent his going about his usual occupations. About the middle of December the pain became more violent, and he was confined to the house for a fortnight; after this the pain abated, so that he was able to go about with the assistance of a crutch.

In March, 1811, an abscess burst on the outside of the foot. The formation of the abscess was not attended with any considerable degree of pain.

He formerly had been supposed to labour under incipient *phthisis pulmonalis*; but from the time of the disease having been begun in his foot, he suffered no inconvenience from the complaint in his lungs.

At the time of his admission into the hospital, there was a diffused oedematous swelling of the soft parts over the whole foot and ankle. On the outside there were the orifices of three or four sinuses, which had burst at different periods. He had very little pain, even on motion or pressure. Soon after his admission, another abscess broke on the inside of the heel. On the 11th of July, the leg was amputated.

On examining the foot, the cells of the cellular membrane were found distended with serum and coagulable lymph.

All the bones had undergone a morbid change, similar to what was observed in the last case, except that they were still softer, and more vascular. The cartilages of the ankle were completely destroyed by ulceration, and the exposed surfaces of bone were in a state of caries. The cartilages of the tarsus were entire, but, in some places, of a red colour, and this was found to arise from vessels loaded with red blood, extending into them from the bone. The ligaments and synovial membranes of the tarsal joints were in a natural state, as were also those of the ankle, except where they had been destroyed by the abscesses.

CASE XXVI.

This patient was a soldier in the Coldstream Guards; I once had an opportunity of seeing him before amputation was performed; and, through the kindness of the medical officers of the regiment, I was favoured with the previous history of the complaint, and with the opportunity of examining the amputated joint.

William Miles, twenty years of age, of a delicate complexion, with red hair and dilated pupils, was attacked with a slight pain and swelling of the left knee, about the middle of January, 1808. On keeping quiet for a few days, the swelling subsided; but it returned about the end of March, though still attended with very little pain. He was received into the hospital of the battalion at Chatham, and, on the 9th of June following, he was sent to the regimental hospital in London.

At this time the diseased knee measured in circumference three inches more than the other. Fluid was felt external to the joint, and in the cavity of the joint itself. The leg was kept extended, and all attempts to bend it gave considerable pain: but otherwise the pain which he endured was trifling, amounting only to a slight degree of uneasiness deep-seated in the joint. On the 8th of July, an abscess burst near the inner edge of the patella, and discharged about eight ounces of thin pus. On the 27th of July the limb was amputated.

On examining the knee, the articulating extremities of the tibia and fibula were found so soft that they were readily cut by a common knife: they contained much less earthy matter than is usual, and their cancelli were filled by a yellow cheesy substance.

The cartilage covering the head of the tibia was destroyed by ulceration in a few spots at the margin. That of the femur was eroded for a very small extent behind the crucial ligaments. The patella, and the cartilage covering it, were in a natural state. Coagulable lymph, having a gelatinous appearance, had been effused into the cellular membrane, on the outside of the synovial membrane. Pus was found external to the joint, and in the joint itself.

The preceding cases sufficiently illustrate the nature and progress of this disease. The morbid affection appears to have its origin in the bones, which become preternaturally vascular, and containing a less than usual quantity of earthy matter; while, at first, a transparent fluid, and afterwards a yellow cheesy substance, is deposited in their cancelli.

From the diseased bone vessels carrying red blood shoot into the cartilage, which afterwards ulcerates in spots, the ulceration beginning on that surface which is connected to the bone. The ulceration of the cartilage often proceeds very slowly. I have known a knee amputated on account of this disease, in which the cartilage was absorbed, for not more than the extent of a sixpence.

Occasionally, but not often, a portion of the carious bone dies, and exfoliates.

As the caries of the bones advances, pus is collected in the joint. At last the abscess bursts externally, having formed numerous and circuitous sinuses.

Inflammation takes place of the cellular membrane, external to the joint. Serum, and afterwards coagulable lymph, is effused, and hence arises a puffy elastic swelling in the early, and an œdematous swelling in the advanced, stage of the disease.

Scrophula attacks only those bones, or portions of bones, which have a spongy texture, as the extremities of the cylindrical bones, and the bones of the carpus and tarsus; and hence the joints become affected from their contiguity to the parts which are the original seat of the disease. I have never met with an instance of the alteration of structure, which has been just described, in the cranium, nor in the middle of the cylindrical bones.

Examples of this disease occur in almost every joint of the body, but oftener in those of the carpus and tarsus than in any other. In one instance which came under my notice, nearly all the joints of the body were affected at the same time in the same individual.

It should be observed, that in some other cases besides those of scrophulous affection, the bones are found to be more or less altered from their natural texture. When a bone is extensively carious, it appears as if the absorption of the earthy part takes place more rapidly than that of the animal matter, and hence it becomes preternaturally soft in the neighbour-

hood of the carious surface, at the same time that it assumes a dark colour and has a fetid smell, from the lodgment of matter in the cancelli. In cases where a disease has evidently originated in the soft parts of a joint, I have occasionally found the bones to have lost much of their original hardness of texture, though the alteration has been in a much less degree than in scrophulous bones, and without the deposition of yellow cheesy substance in the cancellous structure. Some circumstances induce me to suspect that mere want of use is sufficient to occasion a deficiency in the secretion of phosphate of lime, and, indeed, the analogy of what may often be observed after a fracture, renders this highly probable. When the two broken ends of a bone have become united by callus, the callus, in some instances, does not become ossified, while the patient continues in bed, and in a state of rest; but if he moves about on crutches, and exercises the limb, the ossification is speedily produced.

The diseases which have been described in the foregoing sections are those of the most frequent occurrence. There are some other affections to which the joints are liable, but a brief notice of these will be sufficient.

1. Occasionally inflammation takes place on the articulating extremity of a bone, and an abscess forms and bursts into the joint. Where this happens, there is sometimes a fresh formation of bony matter in consequence of inflammation, and ossification of the periosteum, and this constitutes the only species of diseased joint which has come under my own observation, in which an actual enlargement of bone takes place. Where the soft parts of a joint are considerably thickened, a feeling is sometimes given to the hand, as if the bones themselves were increased in size; but my friend Mr. Lawrence, some years ago, observed and pointed out that this feeling is deceptive.

2. I have known an instance, in which, without any evident

cause, a large portion of the head of the tibia died, and exfoliated, and the destruction of the knee joint was the consequence.

3. The loose bodies, which are occasionally found in a joint, have been so frequently described by writers, that it might appear unnecessary to offer any observations on the subject. But I have met with two cases in which the loose bodies were of a different nature, and had a different origin, from those which are ordinarily met with. It not unfrequently happens, that from some morbid action, a bony ridge is formed, like a small exostosis, round the margin of the cartilaginous surfaces of the joint. In the two instances, to which I allude, this preternatural growth of bone had taken place, and in consequence of the motion of the parts on each other, portions of it had been broken off, and lay loose in the cavity of the joint.

4. The effects of gout on the joints are very remarkable. The cartilages are absorbed: the exposed surfaces of bone, are entirely, or partially, encrusted with white, earthy matter, which I conclude to be urate of soda, and sometimes they have the appearance of being formed into grooves, as if they had been worn from their friction on each other. In some cases, repeated and violent attacks of gout occasion complete ankylosis.

I am induced to hope, that the foregoing observations will be found to lay the foundation of a better arrangement of the diseases of joints, than that which has usually been adopted; but I am well aware that the subject is by no means exhausted. I shall endeavour to avail myself of such opportunities as may occur of prosecuting the investigation further; and, in the mean time, I beg the indulgence of the Society for not having already rendered it more perfect. The study of pathology is indeed attended with peculiar difficulties. There is no science in which a greater number and variety of facts demand our notice; none in which a just and accurate knowledge of facts

is less easy to be obtained; or in which the phenomena are so little capable of being reduced to general laws. A multitude of causes, too minute to be detected, silently operate, sometimes to modify and alter the effects of the same morbid action; at other times, to give a similar form and character to different diseases. Particular periods and particular climates produce their own peculiar maladies; and hence, the labours of those who have gone before us, or who have made their observations in other countries, are often of little service towards promoting the researches in which we ourselves may be engaged. All these circumstances render it impossible to bring pathology to that degree of perfection, which has been attained in some other branches of knowledge; but the difficulty of the science does not render it less important to human nature, nor less necessary to be pursued by those engaged in the medical profession.

Account of a Family having Hands and Feet with supernumerary Fingers and Toes. By ANTHONY CARLISLE, Esq. F. R. S.

[From the Transactions of the Royal Society of London.]

ZERAH COLBURN, a native of the township of Cabot, in the state of Vermont, in North America, has been lately brought to London, and publicly exhibited for his extraordinary powers in arithmetical computations from memory. This boy has a supernumerary little finger growing from the outside of the metacarpus of each hand, and a supernumerary little toe upon the outside of the metatarsus of each foot. These extra fingers and extra toes are all completely formed, having each of them three perfect phalanges with the ordinary joints, and well-shaped nails.

Abiah Colburn, the father of Zerah, has five fingers and a

thumb upon each hand, and six toes on each foot; he has also five metacarpal bones in each hand, and six metatarsal bones in each foot. The extra limbs have distinct flexor and extensor tendons.

The wife of Abiah Colburn has no peculiarity in her limbs. During the existing marriage she has borne eight children, six sons, and two daughters. Four of those sons inherit the peculiarity of their father more or less complete, while the two daughters are free from the family mark, as well as two of the sons, namely, the fourth in succession, who was a twin, and the eighth.

The eldest son of these parents, named Green Colburn, has only five toes on one of his feet, but the other foot and both his hands possess the extra limb.

The second child, Betsy Colburn, is naturally formed.

The third, Zebina Colburn, has five fingers and a thumb upon each hand, and six toes upon each foot.

The fourth and fifth were twin brothers, and named David and Jonathan; David, who is dead, had nothing of the father's mark, but Jonathan has the peculiarity complete.

The sixth, Zerah Colburn, the extraordinary calculating boy, is marked like his father, as before described.

The seventh, Mary Colburn, is naturally formed.

The eighth and last child, Enos Colburn, is also exempt from the father's peculiarity.

Besides the persons I have mentioned, this hereditary redundancy of limbs has been attached to the little fingers and to the little toes of several of the ancestors of the family. The mother of Abiah Colburn brought the peculiarity into his family. Her maiden name was Abigail Green; she however had not the extra finger on one of her hands; the other hand and her feet were similarly marked with those of her son Abiah.

David Colburn, the father of Abiah, had no peculiarity. By his marriage with Abigail Green he had three sons and one daughter. Two of these sons and the daughter were fully

marked in all the limbs; the other son had one hand and one foot naturally formed.

Abigail Green inherited these supernumerary limbs from her mother, whose maiden name was — Kendall, and she had five fingers and a thumb upon each hand, and six toes on each foot.

The marriage of — Kendall with Mr. — Green produced eleven children, whom Abiah Colburn's mother, who was one of the eleven, reports to have been all completely marked; but the present family are unacquainted with the history of the other ten branches, and they do not possess any knowledge of their ancestors beyond — Kendall, the great grandmother of Zerah Colburn.

Numerous examples of the hereditary propagation of peculiarities have been recorded; all family resemblances, indeed, however trifling they may appear to a common observer, are interesting to the physiologist, and equally curious; though not so rare as those described in the preceding history. In every department of animal nature accumulation of facts must always be desirable, that more reasonable inductions may be established concerning the laws which direct this interesting part of creation: and it might be attended with the most important consequences if discovery could be made of the relative influence of the male and female sex in the propagation of peculiarities, and the course and extent of hereditary character could be ascertained, both as it affects the human race in their moral and physical capacities, and as it governs the creatures which are subdued for civilized uses. Nor is it altogether vain to expect that more profound views and more applicable facts await the researches of men, who have as yet only begun to explore this branch of natural history, by subjecting it to physical rules.

Though the causes which govern the production of organic monstrosities, or which direct the hereditary continuance of them, may for ever remain unknown, it still seems desirable to ascertain the variety of those deviations, and to mark the

course they take, where they branch out anew, and where they terminate, There is doubtless a general system, in even the errors of nature, as is abundantly evinced by the regular series of monstrosity exhibited both in animals and vegetables.

It has happened, in my professional capacity, that I have had to extirpate a supernumerary thumb from each of the hands of two girls, who were both idiots, though the families to whom they belonged were unknown to each other. I have seen many instances of supernumerary thumbs and supernumerary fingers in persons to whom the singularity was not hereditary, and I have read of many others; but whether of my own experience, or of authentic record, the redundancy has been on the outer side of the little finger, and outer side of the thumb, never on the back or inside of the hand, or on the sides of the intermediate fingers; and in similar cases as to the toes, the rule has been invariably the same. In the Sacred Writings an example of this kind is given, 2 Samuel, ch. xxi. ver. 20, "And there was yet a battle in Gath, where was a man of great stature, that had on every hand six fingers, and on every foot six toes, four-and-twenty in number; and he also was born to the giant." The same account is repeated in 1 Chronicles, ch. xi. ver. 6.

In the *Elementa Physiologia* of Baron Haller, numerous examples of this deformity are cited from various authors, with some instances of their hereditary descent, and others of a cutaneous junction between the extra limbs and the next adjoining.

That local resemblances, such as those of external parts, the hands, the feet, the nose, the ears, and the eye-brows, are hereditary, is well known; and it is almost equally evident, that some parts of the internal structure are in like manner transmitted by propagation; we frequently see a family form of the legs and joints, which gives a peculiar gait, and a family character of the shoulders, both of which are derived from an hereditary similarity in the skeletons. Family voices

are also very common, and are ascribable to a similar cause. Apparently many of our English surnames have been taken from the hereditary peculiarities of families, and the same practice existed among the Romans. Pliny in his eleventh book, chap. xliii. relates an instance of a Roman poet, named Volcatius, who had six fingers on each hand, and received the surname of *S-digitus* in consequence. He also states, that two daughters of a noble Roman, named M. Curiatius, had each six fingers, and that they took the surname of *Sédigitæ*. Persons who had the surname of *Flaccus* were so called from their pendulous ears; and numerous other instances are recorded by classic writers, of surnames being derived from family marks.

Anatomical researches have not been so generally extended as to determine the prevalence of internal peculiarities, and perhaps they do not reach to the sanguineous system. I have known two instances, in two different families, of the high division of the brachial arteries having the ulnar branch placed above the fascia of the biceps muscle at the inner bend of the elbows, and yet the father, the mother, the brothers and sisters of those two persons were not so formed. Those marks called *nævi materni*, which are derangements of the sanguineous vessels, are not hereditary, whilst less remarkable changes in the ordinary skin are often so. I have lately seen a man, and who is now living, who has a small pendulous fold attached to the skin of his upper eyelid, and the same peculiarity has been transmitted to his four children. It would have been interesting to know whether any similarity of structure existed in the families of the two rare examples of a total transposition of the abdominal and thoracic viscera. (Phil. Trans. for 1674, No. cvii. p. 164, by Dr. Sampson, and vol. lxxviii. p. 350.)

In particular breeds of animals the characteristic signs are generally continued, whether they belong to the horns of kine, the fleeces of sheep, the proportions of horses, the extensive varieties of dogs, or the ears of swine. In China the varieties

of gold or silver fishes are carefully propagated, and with us, what are vulgarly called "fancy pigeons" are bred into most whimsical deviations from their parent stock.

As wild animals and plants are not liable to the same variations, and as all the variations seem to increase with the degree of artificial restraint imposed, and as certain animals become adapted by extraordinary changes to extraordinary conditions, it may still be expected that some leading fact will eventually furnish a clue by which organic varieties may be better explained. A few generations of wild rabbits, or of pheasants, under the influences of confinement, break their natural colours, and leave the fur and feathers of their future progeny uncertainly variegated. The very remarkable changes of the colour of the fur of the hare, and of the feathers of the partridge, in high northern latitudes, during the prevalence of the snow, and the adaptation of that change of colour to their better security, are coincidences out of the course of chance, and not easily explained by our present state of physical knowledge.

The Volcano of Albay.

For the following very interesting account of a late eruption of the Volcano of Albay, the editors of the New York Commercial Advertiser are indebted to the politeness of captain Bailey, of the schooner Cintra, who arrived on Monday, April 3d, 1815, in 110 days from Manilla. This volcanic mountain is situated in the province of Camarines, on the southern part of the Island of Lucon, or Luconia, one of the Philippine Isles in the Indian Ocean.

Five populous towns were entirely destroyed by the eruption; more than twelve hundred of the inhabitants perished

amidst the ruins; and the twenty thousand who survived the awful catastrophe, were stript of their possessions and reduced to beggary.

Dreadful and memorable occurrence, that took place in the Province of Camarines, on the 1st day of February, 1814.

[Extracted from a Pamphlet in the Spanish language, printed at Manilla.]

More than thirteen years had elapsed, during which the volcano of Albay, by some called Mayon, had preserved a continued and profound silence, without giving the least sign of its existence. It was no longer viewed with that distrust and horror with which volcanoes usually inspire those who inhabit their vicinity. In the year eighteen hundred its last eruptions took place, in which it emitted a great quantity of stones, sand and ashes, (as had always been usual) and occasioned considerable damage to the same villages that it has now completely destroyed; rendering useless a great number of fertile fields, which thenceforth were converted into arid and frightful sands. In the latter part of October of that year, the last eruption happened, and caused more damage to those villages.

Since that time we had not remarked any circumstance indicative of the existence of the volcano, and therefore all the apprehension that it had formerly inspired was gradually dissipating.

In this state was the volcano on the first day of February last. No person reflected, in the slightest degree, upon the damages and losses that so bad a neighbour had been in the habit of occasioning. We had become persuaded, in consequence of so long a silence, that it was now completely extinguished, and that all those subterraneous conduits were closed, through which it attracted to itself and kindled the combustible materials which it had formerly so continually thrown out. Nor had we seen or remarked any signs which might indicate to us before hand what was about to take place. In

the former eruptions, there were heard, a considerable time previous, certain subterraneous sounds, that were sure pre-sages of them. It also emitted, almost continually, a thick smoke, by which it announced them. But upon the present occasion we remarked nothing of all this. It is true, that on the last day of January we perceived some slight shocks; but we scarcely noticed them, on account of their having been very frequent, since the earthquake that we experienced on the fifth of October of the year eighteen hundred and eleven. On Monday night the shocks increased. At two in the morning we felt one more violent than those we had hitherto experienced. It was repeated at four, and from that hour they were almost continual until the eruption commenced.

Tuesday dawned, and I scarcely ever remarked at Camarines, a more serene and pleasant morning or a clearer sky. I observed, however, that the ridges nearest to the volcano were covered with a mist, which I supposed to be the smoke of some house thereabouts, that had been on fire in the night. At eight o'clock, on that fatal morning, the volcano began suddenly to emit a thick column of stones, sand and ashes, which, with the greatest velocity, was elevated in a moment to the highest part of the atmosphere. At this sight we were astonished, and filled with the utmost dread, and especially when we observed, that in an instant, the brow of the volcano was covered by it. We had never seen a similar eruption, and were immediately convinced that a river of fire was coming towards us, and was about to consume us. The swiftness with which that dreadful tide rolled towards us, did not us give much time either for reflection or conversation. The frightful noise that the volcano made, caused great terror, even in the stoutest hearts. We all ran terrified, and filled with the greatest dismay and consternation, endeavouring to reach the highest and most distant places, in order to preserve ourselves from so imminent a danger. The horizon began to darken, and our anxieties redoubled.—The noise of the volcano continually increases; the darkness augments; and

we continue our flight for the preservation of our lives, removing farther and farther from an object so terrific. But notwithstanding the swiftness with which we run, we are overtaken in our disastrous flight by a heavy shower of huge stones, by the violence of which many unfortunate persons are in a moment deprived of life. This unforeseen and cruel circumstance, obliges us to make a pause in our career, and to shelter ourselves under the houses; but flames and burnt stones fall from above, which in a short time reduce them to ashes.

The horrid and frightful noise of the volcano increases to its utmost—the shower of stones and thick sand augments—the burning stones and meteors continue to fall; and in a very short time reduce to ashes the most beautiful villages of the province of Camarines. The animals of the mountain descend precipitately to the villages, to seek in them a secure asylum. The domestic animals run terrified with the greatest disorder and affright, uttering cries that indicate their approaching end.

At about ten in the forenoon it ceased to rain heavy stones, and each one endeavoured to remain in the situation he then was, waiting until the rain of thick sand which succeeded it should also cease, or until some new and unforeseen calamity should terminate the existence of us all.

We thus continued until half past one in the afternoon; at which hour the noise of the volcano began to diminish, and the horizon to clear a little; at sight of which there was revived in us the hope of life, which until then had been almost wholly extinguished. At about two in the afternoon it became entirely clear, and we began to perceive distinctly the lamentable and dreadful ravages that the darkness had hitherto concealed from us. We saw with terror the ground covered with dead bodies, part of whom had been killed by the stones, and the others consumed by the fire. Two hundred of those perished in the church of Budiao—thirty-five in a single house in that village. The joy that all felt at having preserved life through such imminent dangers, was, in many, instantly

converted into the extremity of sorrow at finding themselves deprived of their relations, friends and acquaintances.

The sad result of the misfortunes of that day has been the total ruin of five villages, in the province of Camarines, and the principal part of Albay—the death of more than twelve hundred unfortunate persons, and many others severely wounded—the loss of every thing that the survivors possessed in the world.

The present appearance of the volcano is most melancholy and terrific. Its side, which was formerly so cultivated, and which afforded a prospect the most picturesque, is now nothing but an arid and barren sand. The stones, sand and ashes which cover it are so astonishing in quantity, that in some places they exceed the thickness of ten and twelve yards; and in the very spot where lately stood the village of Budiao, there are places in which the cocoa trees are almost covered. In the ruined villages, and almost through the whole extent of the eruption, the ground remains covered with sand to the depth of half a yard, and scarcely a single tree is left alive. The crater of the volcano has lowered, as I judge, more than twenty fathoms, and on the south side discovers a spacious and horrid mouth which it is frightful to look at. Three new ones are opened at a considerable distance from the principal crater, through which also smoke and ashes were incessantly emitted. In short, the most beautiful villages of Camarines and the principal part of that province are converted into a barren sand.

ORIGINAL PAPERS.

FOR THE ECLECTIC REPERTORY.

Memoir, exhibiting a very simple method of perceiving objects formed at the back part of the Eye. Translated from the French of M. MAGENDIE, D. M. P., by N. C. NANCREDE, M. D. &c. &c.

THE formation of images at the back part of the eye is not to be explained from a knowledge of the structure of the eye and of the laws of dioptrics alone; philosophers demonstrate their formation by direct experiments also.

For this purpose Schreiner, Hook, Camper, Lecat and others, sometimes employed artificial eyes, composed of glass and water. The results obtained by these gentlemen were in a degree, satisfactory; i. e. they saw images, tolerably well formed, on that part of the glass representing the retina. The dissimilarity which necessarily exists between such instruments and the eye of an animal, has caused them to be entirely abandoned: at least I do not know that any philosopher makes use of them at present.

A method better known, and now the only one in use, consists in fixing, in the shutter of a dark room, the eye of an animal; the precaution having been taken to deprive its posterior part of the sclerotica and choroid. The images of objects placed so as to emit rays towards the pupil, are then very distinctly seen on the retina. In these experiments the eyes of bulls, sheep, dogs, cats, and even human eyes, have been employed.

When this method is adopted, in order to ensure complete success, it is necessary, 1st. That the eye be very fresh, or in other words, that the animal, whence the eye has been obtained, should have expired within a very few moments: 2d. That the retina be found sound, when the sclerotica and choroid have been taken off: 3d. That the shape of the eye

be not altered; and it is no easy matter to unite these several conditions.

We may easily procure eyes, from the animals abovementioned, at the very moment of their death, but the difficulty does not solely rest here; the sclerotica and choroid must be taken away without injuring the retina; this is attended with considerable difficulty; and when, by a great deal of care, we have succeeded in preserving the retina unimpaired, we must remember that the shape of the eye must not be altered; this is almost impossible, for the least pressure on an eye, previously deprived of the sclerotica and choroid, or even the simple collapse, is sufficient to occasion the rupture of the retina, or the displacement of a portion of vitreous humour, which unavoidably occasions an alteration of the shape of the organ of sight.

The measures generally resorted to, to prevent this inconvenience, such as putting the eyes in a small cup made of pasteboard (*coque de Carton*) to direct the reflection of the image on a piece of oiled paper, taking from the eye only the sclerotica, &c. are far from fulfilling the intention; nay, they often do more harm than good.

If the operator were to take off these coats only twenty-four hours after the animal's death, he would experience much less difficulty, because they have then lost by evaporation a portion of their humours; he would also obviate one of the great difficulties attendant on the experiment: but on the other hand, the refractive parts of the eye are altered, the crystalline lens has lost a part of its transparency, and the aqueous humour having dissolved part of the pigmentum nigrum, has become turbid, and admits only of an imperfect transmission of the rays of light.

To these great difficulties we must attribute, that the experiment is so very seldom tried, and still less attended with the desired result.

If in what I have just stated I have expressed myself clearly, it will appear evident, that the opacity of the sclerotica

and choroid, is the only obstacle to the success of this experiment; since it is the opacity of these coats, which makes their removal necessary.—Easy indeed would the experiment become, if we could operate upon eyes, whose exterior membranes were transparent to a certain degree: thus permitting us to see the images formed on the retina.

Chance has thrown in my way an opportunity of remarking, that the eyes of many domestic animals possess this advantage; for instance rabbits, guinea pigs, young dogs, kittens, and pigeons; and this becomes the more apparent as the animals are younger. The eyes of owls and other nocturnal birds of prey, present a similar structure. If these birds were more frequently to be met with, and if their eyes resembled more those of the mammiferæ, by their size and degree of transparency of their exterior membranes, perhaps they ought to be preferred to those of the animals enumerated above. However, we have only to take the eye of one of the above-mentioned animals, to separate the sclerotica from the fat and surrounding muscles, and to direct the pupil towards illuminated objects; the images will be then seen distinctly represented through the sclerotica and choroid on the retina. As the experiment succeeds without the dark room, it is unnecessary to have recourse to it.

Thus this important experiment, which required a great deal of precaution and skill, and which could be repeated only by a very small number of persons, can henceforth be performed by any one, and without fear of failure.

I will however add, that when recourse is had to this mode, images are distinct only where the objects are very bright. The image of an object is much better seen, when the object is exposed to the sun, than when it is placed in the shade. I shall also state, that the black matter with which the choroid is covered, prevents the distinguishing, perfectly, the genuine colours of the image; for instance, the image of a flame of a taper appears to have a reddish tinge, which, in reality, it does not possess.

I sought, for some time, the means of obviating this inconvenience. It finally struck me, that among the species, the eyes of which I had employed, there were some that were albinos. It is well known that one of the characteristic marks of this abasement of animals, is the absence of the coloured coat of the choroid and iris.

I examined the eyes of white rabbits and albinos pigeons; I was much gratified to find, that they were in the most favourable condition. The sclerotica is thin and nearly transparent; the choroid is likewise thin, and as soon as the vital spark is extinguished in the animal, the blood which coloured this part disappearing, it becomes incapable of offering any sensible obstacle to the passage of light. Indeed the eyes of these animals appear to have been formed for the express purpose of showing the images that form on the retina. The outline is well defined, and all the colours distinctly perceived; and so perfectly are they represented, that the image of the sun hurts the eyes of the examiner, almost as much as if he were in reality viewing this planet.

A very convenient mode of making the experiment, consists in placing yourself at the window of the first story, during a fine day; to direct the transparent cornea of a large white rabbit towards the street: every person that passes, is then represented on the retina, by an image of about a *millimètre** in height; the colour of the dress and the slightest

* The new French measures proceed in a decimal order; for instance, the millimètre is the tenth part of the centimètre; the latter is the tenth part of the decimètre, the decimètre is the tenth part of the mètre, and so on. The numbers which are annexed to the following names of the French measures, express the number of English inches, or troy grains to which they are equivalent.

Millimètre	- - - - -	0,039371
Céntimètre	- - - - -	0,39371
Decimètre	- - - - -	3,9371
Mètre	- - - - -	9,371

The mètre is equal to the forty millionth part of the whole circumference of the earth.

motions of the individual, are represented with such surprising accuracy, that the spectator is at once amused and astonished.

The facility with which images are beheld by this method, has enabled me to make some remarks, and suggested some experiments; I will in a few words say something of both.

On a fresh eye, images always appear clearly defined and their size increased, on the object being brought closer; and their diminution by its being removed farther off has no effect upon their clearness. If we were to rely upon the first view, we should be led into the belief, that the eye is a perfect acromatic instrument.

I wished to determine what would be the effect of a circular pressure, made perpendicularly to the axis of the eye, from behind forwards, near the middle of this organ: I found, that whatever be the degree to which it is carried, the effects are not to be discovered in the dimensions of the image. If it has any influence, I presume it is perceived by the intensity of the light; at least it appeared to me, that the intensity of the light was greater after the pressure.

It must not be thought, that a deficiency in the clearness of the outlines of the image, cannot be detected at first sight; it is only necessary to make a small opening in the transparent cornea, with a point of a lancet, near to its circumference, so as to occasion the exit of a small portion of aqueous humour, as it thus becomes very apparent that the image has lost its clearness.

I afterwards sought to ascertain the rule, by which the image decreases in consequence of the increased distance of the object; I found that the size of the image is visibly proportioned to the distances. Mr. Biot was kind enough to assist me in ascertaining this; in other respects it corresponds with what has been published by Mr. Lecat in his *Treatise on Sensations*.

What alteration would take place in the form and dimen-

sions of the image, if the refracting parts of the eye were removed? This could only be ascertained by experiments.

I made a small opening at the circumference of the transparent cornea, near its union with the sclerotica, and contrived so that the aqueous humour should escape through it. The image (it was that of the flame of a taper) appeared to me, *ceteris paribus*, to occupy a larger space on the retina; it was evidently not so well defined and less bright, as the image of the same object seen in the eye of the other animal, which I had just placed in the same position, with respect to the taper, but which had been preserved entire, in order that it might serve as a comparison.

Depriving afterwards the eye, from which I had extracted the aqueous humour, of the transparent cornea, by means of an incision made circularly at its junction with the sclerotica, the image did not appear to me to have altered its dimensions; but I thought that the light which formed it had lost much of its brilliancy.

This, as well as the preceding fact, become conspicuous, when the object, the image of which we examine, is situated at a considerable distance, five or six mètres for instance.

An eye, from which the transparent cornea has been taken, presents the iris naked; it is then easy to enlarge the pupil, by means of a circular incision in the substance of the iris. And upon an eye whose pupil I had thus enlarged, it appeared to me that the image had increased by the very act of enlargement.

If we take the anterior lamella of the capsula of the crystalline lens, with all due precaution, from an eye whose transparent cornea has been removed, the image is surrounded by a circle of light, less bright and irregular at its circumference.

When we extract the crystalline lens, by a process similar to that of the operation of the cataract, the image is always formed at the bottom of the eye. But it has become considerably larger; and is at least four times the size of the image,

produced in an entire eye: It is besides imperfectly defined, and the light which produces it, very dull.

When, from the same eye, we take the aqueous humour, and the crystalline lens, and only leave, of the interior parts of the eye, the vitreous humour and the crystalline capsule, images are no longer seen formed at the bottom of the eye; light, it is true, penetrates, but causes no image to be represented correspondent with that from which it is reflected.

I have thus enumerated the small number of facts, which the facility with which images may be seen formed on the expansion of the optic nerve, has enabled me to ascertain: the greater part correspond with the theory of vision: some however form exceptions. To the philosopher it appertains to decide whether these last merit any degree of attention.

Case of a Wound of the Knee Joint.

BY DR. WILLIAM WATSON.

Hay Market, Prince William County, Va. July 4th, 1814.

To the Editors of the Eclectic Repertory,

GENTLEMEN,

THE following case was communicated to me, by Doctor William Watson, of Bedford, Pennsylvania, a physician of great respectability; and thinking it might be of practical importance to the public, I obtained his consent to publish it, with such remarks on it as I might think proper to make. These are few, and accompany the report of the case, both of which you will please to publish, if they should appear worthy of a place in the Eclectic Repertory,

And oblige

THOMAS P. HEREFORD.

" February 15th, 1814.

"A stout, rugged, hardy fellow, of five and forty, had inflicted a very narrow wound on his knee, but which had penetrated the capsular ligament, in the hollow near the patella. He had but little pain, and continued to hew with his broad-ax, (the instrument which had caused the wound,) for two or three days longer, till inflammation and pain commenced, with synovial discharge; the night after which he was seized with severe spasms extending up the large muscles of the thigh, which laid hold of the xiphoid cartilage and jerked it back towards the spine with great force. Under these circumstances I first saw him. I expected the immediate appearance of tetanus. The knee was very hot and inflamed, but his pulse was very obscure. I was much tempted to bleed him ad deliquium animi, according to the successful treatment of hydrophobia, but finally determined on the plan of mercury and opium; the opium soon induced intoxication, which was kept up for forty-eight hours, during which time the spasms disappeared; a large saturnine poultice was also applied to the knee. After this time the spasms were confined to the knee and its neighbourhood, but without pain, excepting in one point about two inches below the joint, without the smallest symptoms of inflammation. The pain in this part was intolerable, particularly at night. The swelling diminished in the joint, and with the use of anodyne liniments, and sedative or astringent poultices, the pain in a degree subsided for some weeks. It then returned in the same point; the knee swelled, the veins became turgid, and all the phenomena of white swelling of the joint were assumed, except that pain remained in the point mentioned below the joint, which was entirely free from pain. There was little general fever; the pain was excruciating; he screamed day and night; no external application would give him the slightest relief. Large quantities of laudanum alone gave temporary ease; but even these began to fail. He had slept none for sixteen days and nights; his leg

and foot became œdematous. The sensibility was extreme; touch him in any part and he was instantly all in motion, except his leg and knee, which nothing would induce him to move, and which he would suffer none to touch. He begged me to amputate the limb. But I still thought I could relieve him by mercury, and waited several days for a more tranquil period, in which the general system might be more obedient to the mercurial excitement. At the time mentioned, his pulse, instead of beating like a small cord, became more open. I then gave the mercury freely internally, and immersed the whole leg and foot in strong mercurial ointment. The mercury now soon brought the system under its influence; the excitement perceptible in the arteries; but no swelling of the gums, mouth or throat. The pain instantaneously left him. The swelling gradually disappeared. The mercury was continued for two weeks, at the end of which time I had him out of bed; and the flexor muscles of the leg are now regaining their elastic power.—I know not whether this case is very singular; I had one before somewhat similar, which I believe I communicated to you. You will ask why did I not bleed? After the use of the mercury and opium in the first instance, there was a peculiarity of pulse and countenance which deterred me. Something which I cannot describe, but which from experience had proved, that bleeding would not remove. Possibly, had I bled at first, much pain and labour might have been saved, and a safe period for the exhibition of mercury might have been presented. I have had few late publications, and am so much out of the way of the practice of others, that I know whether there is any thing new to you in this case; if not, take the design of being useful in place of the usefulness.”

Yours truly,

WILLIAM WATSON.

Dr. Thomas P. Hereford.

REMARKS.

THE treatment of this case strongly exemplifies the power which mercury possesses to alter and control the morbid condition of the living human system: and whilst we witness its effects, we lament that we know so little of its *modus operandi*. Many learned and ingenious opinions have been advanced on the subject, but not one adventurer has been so fortunate as to elucidate the mystery. Though thus much, with no small share of satisfaction, we acknowledge to know of mercury, that, with its ordinary properties, it possesses a peculiar stimulant and alterative one; and that it is by this quality that it exerts a specific power in regulating and controlling the living actions of the human body. In the case before us there appears to have been something pathognomonic in many of the symptoms, and it certainly was a very desperate one. I am led to suppose that nothing but the severe local pain and morbid sensibility of the organ of touch prevented it from assuming all the symptoms of tetanus. I am also much disposed to believe that bloodletting would have been highly important in it had it preceded, or even accompanied the use of mercury; particularly if the man had been bled *ad deliquium animi*: For in such cases, the bloodvessels being robbed of their due excitement by the muscles and nerves, bleeding sparingly would probably do little or no good; as it requires, to take off excess of nervous and muscular excitement and consequent irritability of the muscles, that the whole system should be thrown suddenly into a state of relaxation by copious bloodletting. At this period the bloodvessels seem to draw upon the nerves and muscles for excitement, and thereby lessen and interrupt the morbid associations of the general system. This then affords a favourable opportunity for the introduction of mercury; it now much more readily imparts its stimulus to the system, and extinguishes morbid action, by establishing its own proper and specific excitement. But as

this patient lost no blood, I presume the remedy had to conflict with morbid excitement for a longer period before it could predominate. The topical application of the ung. merc. in the liberal manner in which it was used, must have been judicious and useful, uniting emollient with alterative virtues. I never employed it in similar affections but once, when it was attended with very happy consequences; and it was upon the authority of my friend Dr. Watson that I then resorted to it. I also gave mercurials freely internally, and bled the patient copiously. The mercury quickly produced a pytalitic effect, the symptoms yielded, but the patient recovered the use of the limb very slowly, notwithstanding the mercurial excitement was supported during the convalescence.

Although I have in these remarks supposed that venesection would have been a valuable auxiliary in the treatment of Dr. Watson's patient, I feel myself free to say that I am not confident thereof. Perhaps that indescribable something, which he has allusion to, derived from experience, and which was the result of personal observations made by a man, whose mind is at once cool, sober, discerning and apt; never rash and impetuous, but bold where boldness is required, and cautious when caution is necessary, may have well directed him in the management of the case; in fact the result has proved it, for if the advances towards the cure were not so rapid as I have supposed they might have been through the agency of the lancet, they were patient, ingenious, firm and successful. My design has been to draw the attention of the public to a remedy which I consider a *sine qua non* in most of those violent spasmodic affections arising from injuries of the joints; it seems to be too much confined to the diseases of the blood-vessels, and too seldom addressed to affections of the muscles from the action of local irritants.

FOR THE ECLECTIC REPERTORY.

*Description of a Sick-Bed, proposed by JOHN RHEA BARTON,
of the Pennsylvania Hospital.*

THE conveniencies of a sick-bed, and the disadvantages of the common kind, in the treatment of many medical and surgical cases, are already too well known to require any repetition. All that seems necessary here, is to state one or two of the principal objections to Earle's bed, as an apology for the construction of another for similar purposes. These are, that its great expense and complicated structure appear to prevent its use, except in a very few instances; and that the patient always requires at least two persons to assist him.

As the bed-stead and mattress, to be hereafter described, are more simple than the former, and the expense amounts only to about one third of it, and the patient is able to assist himself, merely by turning a crank at the side of his bed, if it possesses no greater advantages, it may seem worthy of some notice.

In this bed, a broad board is substituted for a sacking bottom. In the centre of this board is a circular perforation, the diameter of which is about nine inches; on the under-side are placed longitudinally two cleets, distant from each other twelve inches, and including the hole; between these cleets is placed a kind of lid, the width of which is twelve inches and the length sixteen, and is hung by two hinges at its upper extremity, or that nearest the head of the bedstead, in such a manner that it comes directly under the hole in the board; at its lower extremity is attached a clamp or cross piece which projects on each side about an inch. Another piece is made precisely similar to the lid, except that instead of being suspended by hinges, it is made to slide between the cleets, and in the centre a hole is made to correspond with that in the broad board.

The slider and lid are attached to each other by means of an iron bar, twenty-three inches long, on each side, running from the cross piece of one to that of the other. A roller is placed behind the lid, about six inches from the hinges; the diameter of this roller is four inches, and its length twenty-two, exclusive of its axis at each end, one of which projects beyond the side of the bedstead, and has a crank or windlass affixed to it. From the cross piece of the lid to the roller passes a rope on each side, which is confined along the cleets by two pulleys, one immediately behind the cross piece and the other just before the roller; and from the middle of the cross piece passes another rope to be attached to the middle of the roller, where its diameter is reduced to about one half.

The ropes on the sides wind in one and the same way, whilst that in the middle goes in the opposite direction, so that as the two side ropes are wound up, the middle one is unwound, and vice versa. When therefore the roller is turned in one direction, the side ropes relax and the middle one becomes tense, thereby drawing the lid down; and as the slider is attached to the lid by the iron bars, and is at the same time confined between the cleets, it can only slide along them, by which means the hole in the slider comes directly under that in the board.

A pan is attached to the slider, by three small cleets which confine its brim around the margin of the hole.

The mattress differs from the common ones, only in being perforated in the centre to correspond with the broad board, and having tapes at each corner to tie around the bed-posts. A cushion is tacked to the lid, so that when kept up it fills the vacancy in the mattress.

In the sheet which covers the mattress, a crucial section is made and its corners turned back.

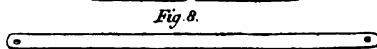
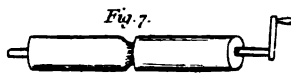
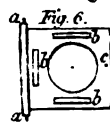
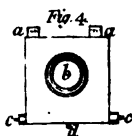
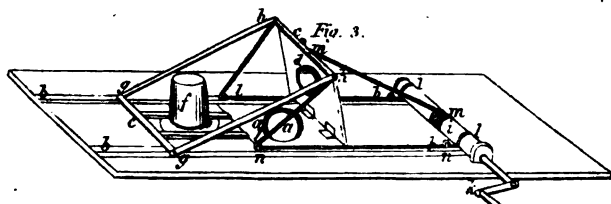
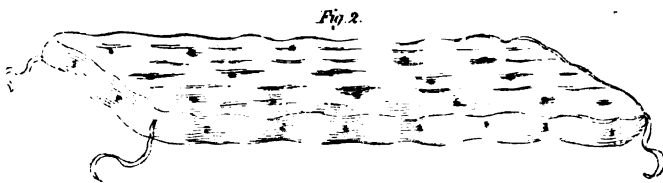
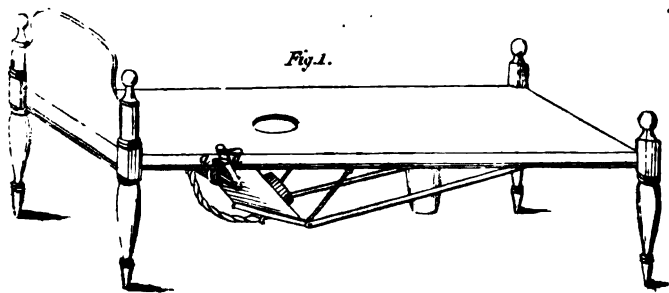
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EXPLANATION OF THE PLATE.

Fig. 1. A view of the bed-stead complete, with the lid half way down.

a. a. A small peg to confine the crank when the pan is not in use.

Fig. 2. The mattress, with strings at the corners to fasten it to the bed-posts, and a circular opening to correspond with that in the bed-stead.*

Fig. 3. The broad board inverted to exhibit the machinery: viz.

a. A circular hole in the board which opens on the pan.

bb. bb. The two cleets.

c. The lid.

d. A circular block, answering in size and thickness to the hole in the broad board, nailed to the lid.

e. The slider.

f. The pot, which should be made of tin.

gh. gh. The iron bars.

i. The cylindrical roller.

k. The crank or windlass.

ll. ll. The side ropes.

mm. The middle rope.

nn. The pulleys on one side, two answering to them on the other.

Fig. 4. The lid.

a. a. The hinges by which it is fastened to the broad board.

b. The circular block represented by *d.* in *Fig. 3.*

c. c. The projecting ends of the cross piece.

Fig. 5. A circular cushion to fit and fill the hole in the mattress, and which is to be tacked to the block represented by *b.* in *Fig. 4.*

Fig. 6. The slider.

a. a. The cross piece.

b. b. b. Three small cleets to confine the brim of the pan.

c. A hole through which a pin is put to confine the pot more completely.

Fig. 7. The roller and crank.

Fig. 8. One of the iron bars; the other being like it.

* The opening in the mattress is omitted, by a mistake of the engraver.

ELOGE OF AMBROSE PARE',
THE FATHER OF SURGERY IN FRANCE;

BY DR. VIMONT.

[From the London Monthly Magazine, for October 1814.]

To describe the great man whose eulogy we now propose, it will perhaps be sufficient to present, on a limited scale, such actions of his life as are best calculated to exhibit the groundwork of his native character, together with his most celebrated inventions; which, when compared with each other, will strongly reflect the image of his mind. Thus neglecting details, which are too often inaccurate, and which besides belong rather to biography than to science, we shall take up Paré, when yielding to his destiny and carried away by his taste for study, and the exercise of an art which expected from him its revival and renown, he arrived in the capital of France, the best theatre for the talents of such a man.

The physiological and philosophical principles of Paré are nearly those of Galen and the Arabian physicians. Vesalius was his guide in anatomy. The sketch which he has given of the system of the latter in his works contains all that was known at that period, with respect to that most essential basis of surgery, and every thing of importance then known in the treatment of diseases and the performance of surgical operations. We find him following the doctrine of Hippocrates in every thing relative to tumours in general, and wounds of the head in particular.

At the outset of his career he perceived that, circumscribed within the confined circle of faulty processes and limited to defective and sometimes barbarous modes of operating, surgery marched by the uncertain and deceitful light of erroneous principles, which, transmitted by the Greeks and Arabs, had been adopted almost without restriction down to the six-

teenth century. His judicious and fertile mind never became acquainted with an evil but he sought to remedy it. From that moment the restoration of surgery was decreed; measuring the immense space which separated him from the object he proposed to attain, and never concealing from himself the difficulties of every kind which attended the execution of such a vast project, sustained by a genius of still greater extent, and particularly by the noble and praise-worthy ambition of being useful to humanity, Paré was anxious to raise to the art of surgery a durable monument, founded upon the most correct traditional knowledge, and upon the facts collected during his own fortunate and extensive practice of half a century.

The valuable materials which, during this period, experience and observation had collected around him, Paré would not give to the world, until, as he informs us, he had consulted several excellent men, "physicians as well as surgeons, who encouraged him to pass beyond even the proposed end of his career."

In his writings, which are full of candour and goodness of heart, Paré never lets an opportunity escape of paying to the ancients the tribute of esteem which they deserve. Every where he speaks of the respect which is due to the first inventors of the art: "So far as it was possible," he says, "I have never suffered that the treasures of the good fathers should be kept secret." He also observes, with his usual good sense, that, notwithstanding the important discoveries for which we are indebted to antiquity, it cannot be denied that surgery, like all the experimental sciences, daily enriching itself with facts, ought necessarily to reckon upon time and observation for increasing its resources and perfecting its methods: "that, moreover, it is unpardonable negligence to stop at the invention of our ancestors, imitating them merely after the example of the idle, without adding to and increasing the inheritance which they have left us."

If we wish properly to appreciate the immense services

which the healing art has received from Paré, let us cast an eye upon the state of surgery, at the period when he first entered upon his career.

“Roger, Roland, Bruno, Guillaume de Salicet, Lanfranc, Gorden, Guy de Chauliac, confined themselves to commentaries on the Arabs, and had reduced surgery to the use of ointments and plaisters.”*

Thus the Arabians and their followers only rivalled the prejudices, and multiplied the errors, which, transmitted from age to age, received the sanction of time and of the authority of some masters. Abandoned to the most despicable empiricism, surgery then was confined to machinery clumsily contrived, if the reduction of a luxated or fractured limb was required; and emplastra of every kind, consisting of strange and incongruous mixtures of contradictory substances, if solutions of continuity of soft parts, of whatever nature, were to be treated.

Whatever of the useful part of surgery had been preserved by tradition, was either despised or mistaken. No trace was perceptible of that philosophic spirit which, wisely desirous of discoveries, incessantly seeks after truth, and in a series of uninterrupted combined efforts, tends to rise above the darkness of ignorance, and to triumph over the seductions of error. Surgery, then more barbarous than the age itself, bursts the fetters of prejudice and authority. It was particularly in the treatment of gunshot wounds, that the most stupid routine seemed destined, as it were, to increase the horrors of war; and, if among the victims of the field, and this murderous routine, some men were so fortunate as to escape the dreadful accidents thus occasioned, they purchased their lives at the expense of frightful mutilations and deformities.

It cannot be denied, that the discoveries which do the greatest honour to human genius have been primitively owing to chance, or rather have been revealed by Providence.

* Richerand. *Nosographie Chirurgicale*, Hist. de l'Art.

Paré is forced to confess that chance was his first master in the treatment of gunshot wounds. Employed at first in the army of Piedmont, he relates, that his practice did not differ from that which had been previously followed. The boiling oil which he was pouring over the wounds having fallen short, he was obliged, with regret, to substitute a very mild digestive. Fear kept him awake the whole of the night. Young, and under the influence of the prejudices of his masters, he expected to find that all those had perished who had not undergone the cruel unction. It was not without astonishment, mixed with pleasure, that he saw quite the reverse had happened. His genius effected the rest.

It belonged to the restorer of surgery to elucidate the treatment of gunshot wounds, by dissipating the prejudices which so long kept back this branch of surgery, by substituting, for the most absurd theory, and the most barbarous processes of blind empiricism, rational ideas, and curative methods, as simple as they were efficacious.

Ignorance, always inattentive, and perceiving no relation between gunshot wounds, considered relative to their external appearances, and the serious accidents with which they are complicated, found it quite natural to ascribe all these effects to the pretended poison of gunpowder, as well as to the cauterizing property of the various projectiles.

Opinions so false, and the dangerous consequences which necessarily resulted from their application to practice, could not fail to strike the mind of Paré in a forcible manner: in a discourse which he addresses to Charles the Ninth, on the occasion of the death of the king of Navarre, who was wounded at the siege of Rouen, he exposes, like an expert physiologist, the mode of action and the various effects of round bodies, and other projectiles, upon the various systems of the animal economy: he demonstrates, that the black colour which marks their passage and their too frequent unfortunate termination, results, 1. From the excessive contusion and laceration of soft parts; 2. From the violent commotion experienced by the

wounded limbs; 3. From the stupor which supervenes, dissipating and sometimes extinguishing the natural heat, whereby gangrene and mortification of the part, if not of the whole body, is brought on.

Thus mouldered away the ridiculous theory of gunshot wounds, adopted by Fevy, Botal, Vigo, &c. previous to the time of Paré. Thus vanished forever the frightful apparatus employed by men who supposed that gunpowder was of a venomous nature, and that balls and bullets became inflamed in their course, so as to cauterize all soft bodies with which they came in contact.

It belongs only to real genius to unite profundity of ideas with strength and precision of style. When genius, embracing the whole of a subject at one grasp, penetrates into all its elements, comparing and generalizing, the mind of a common stamp, scarcely dipping into the matter under discussion, abandons things themselves to attend to the futile arrangement of words, and speedily, far from the traces of good principles, it wanders in the ocean of false hypotheses. What has been the result of such fruitless efforts? Some valuable ideas have been buried under the weight of insipid volumes.

Paré on the contrary has left us but a few pages on gunshot wounds; but nevertheless we may affirm, without fear of contradiction, that, with the exception of some superannuated pharmaceutical preparations, they are full of sage and luminous precepts, well calculated to guide even the modern practitioner in his knowledge and treatment of this description of wounds.

When we compare the doctrine of Paré with all that was previously practised with respect to gunshot wounds, and with the slowness with which the healing art has since advanced, his transcendent merit will appear still more striking. But nothing has escaped his observation. Does he treat of simple or compound solutions of continuity in the bones? His precepts exhibit the consummate skill of the most expert practitioner. In a fracture compounded with laceration, is it necessary to

ascertain the position and state of the parts in general? It is to the fingers alone that he entrusts this office; for he observes, the sense of touch is more certain than any instrument. Will it be believed that this mode of proceeding, dictated by good sense, and supported by experience and the laws of nature, has been called in question? In fact, the probing of wounds with instruments, whatever is their direction, extent, or situation, has passed into one of these routine customs, which but too generally prevail over truth and reason.

From the sublimest eminences of the art, Paré disdains not to descend to the humblest details, persuaded that nothing ought to be overlooked in a profession which has the life and health of mankind under its care; and that a process which was trifling or useless in other hands, may produce the happiest results when resorted to by an enlightened surgeon. In this way Paré regards the art of dressing wounds as a medium, not only for exhibiting manual dexterity, but for bringing into play delicacy of tact and fertility of talent, besides paving the way for a completion of the cure.

After being himself exposed to the formidable concomitants of a compound fracture of the leg, Paré informs us, in the faithful details which he has left behind him, with what scrupulous attention he meditated upon the means of preventing and curing such accidents as may result from such a misfortune. Alluding to the excruciating pain, insupportable heat, and general uneasiness which the patient experiences, he observed, and all attentive practitioners have since observed, that all these concomitants necessarily result from the permanent position in which the body must be placed in fractures of the lower extremities; thus he remarks, that the patient is wonderfully relieved, if from time to time the position of the fractured limb is changed, so as to refresh it by renewing the circumambient air, and momentarily relieving it from the pressure to which the fractured parts are liable. To express this renovation of the air, Paré invented the word *flabellation*, as opposing itself to the progress of inflammation.

But let us return to the accident which befel himself; here again his genius and true heroism did wonders; and here he deduced from his own misfortune precepts highly useful to the advancement of science and the good of mankind. We find him opposing an admirable *sang froid* to the accessions of pain, arming a stranger's hand with the scalpel, guiding him with one hand, and with the other tracing the road through which to come at the splinters, many of which, separated from the periosteum and entangled in the soft parts, were to be methodically extracted; and, after having done all that talent and patient courage could do, leaving to future generations a model to be followed in the treatment of compound fractures.

His Treatise on Luxations, encumbered as it is with the multifarious machinery peculiar to the age in which he lived, nevertheless exhibits the profundity of his ideas. What practitioner is ignorant, for instance, that the luxation of the external extremity was mistaken until the time of Paré, and that the fracture of the neck of the femur was confounded with the luxation in that bone? We need not dwell upon the awful consequences which previously resulted from these blunders.

What he says of the dislocation of the humerus, and the processes for remedying it, evidently proves that he knew the influence of muscular action in reductions. Here again he was truly original, and has laid the foundation of all future improvements in this department of surgery.

May we not say as much for the section of the artery between the ligatures in the operation for aneurism, according to the method generally attributed to Hunter? Is not the following passage, in the works of the French surgeon, an answer to the discussions which have taken place on this subject? "Above all I advise the young surgeon to avoid opening aneurisms if they are not very small, and in parts not dangerous, cutting the skin above, separating it from the artery; then we may pass a seton needle with a strong thread under the artery at both sides of the wound; then should the said

artery be tied and cut, and the wound treated like a simple wound, letting the thread fall away of itself."

Before the time of Paré lesions of arteries were almost always followed by death, unless when nature got the better of the accident, and of the routine, by suspending the hæmorrhage of herself. In these days boiling oil and the actual cautery held the first rank in the means with which the art of surgery met such formidable accidents.

Endowed with a fertile spirit of invention, Paré was the first to propose the rejection of these cruel and barbarous operations for stopping the hæmorrhage from a wounded artery. His two celebrated ligatures are too well known to require a description; suffice it to say, that, according to M. Louis, the eulogist of the French school of surgery, Paré has proved that no description of accident to which the ligature can be applied had escaped the penetration of that great man.

Like all eminently useful discoveries, the ligature of the arteries was at first most violently opposed. Attacked at once by bad faith, ignorance, and envy, Paré might have safely appealed to experience in answer to his antagonist. But such was the simplicity of his heart that he set about to justify his valuable discovery by numerous quotations from the ancients, or rather he struggled to strip himself of his greatest title to future glory!

If the opposition to his invention had come from physicians alone, such as Gourmelen, we should have ascribed it to ignorance of the art of surgery, or to that shameful spirit of personal rivalry, which too often retards the progress of real knowledge; but who can restrain their indignation on hearing that the celebrated Fabricii, whose works are still consulted as the oracles of surgery, were the enemies and detractors of Paré?

But such is the logic of the passions, and such the force of prejudice, that nothing will ever be considered good until it has ceased to be our interest to call it bad. Can we be astonished then that the medico-chirurgical sciences have so long

slumbered, when we see one of the most important discoveries with which they have been enriched, attacked with a kind of furor as inefficacious and even dangerous; and, in spite of the sanctions of authority and experience, exposed to all the shiftings of opinion both in the country of the author and abroad? Ought it not to move our indignation to see this salutary discovery pass through nearly two centuries without irrevocably fixing the ideas of the profession, and making even but a slight impression in the most brilliant æras of our history?

Will it be believed, in short, that surgeons of the last century*, yielding to the influence of routine, and perhaps to the taste for controversy, which still subsisted; instead of bringing to perfection the ingenious process of the good Ambrose Paré, have blindly declared against the ligature in favour of the actual cautery, burnt alum, vitriolic acid, compression, and finally the agaric of the oak? This is to prefer error to truth, darkness to light; and, in combating the hydra of Lerna, to arm ourselves with the distaff of Omphale instead of the club of Hercules.

But it is cheering to observe that one of our greatest masters of the art of surgery, the immortal Desault, reproduced and practised two centuries afterwards the immediate ligature recommended by Paré. This homage is worth a thousand eulogies on the genius of the inventor!

And but for Ambrose Paré, how many warriors would have sunk prematurely into the tomb, without having it in their power to animate the heroic chivalry of youth by exhortations to defend their religion, their prince, and their country, and to excite to deeds of loyalty and valour, even by the exhibition of their mangled bodies and mutilated limbs!

In the diseases of the eye the glory of Ambrose Paré is without a rival. An inveterate ophthalmia, refractory to the various means employed by art and empiricism, had caused

* Vide in particular the *Memoires de l'Acad.* tom. 2, p. 394.

almost total blindness to an Italian jeweller. Taught by experience that there existed sympathetic relations between the eye and the posterior part of the neck, and that great advantages must result from an artificial ulcer in the nape of the neck in some diseases of the eye, the illustrious Paré proposed a seton; the patient consented, and soon afterward he recovered the use of sight.

Among the numerous morbid affections to which the eye is liable, the various degrees of opacity of the crystalline are among the most frequent: this lenticular body, when injured in its interior organization, or merely in the slight membranous texture which surrounds it, will present an insurmountable obstacle to the rays of light, until an expert hand, directed by an exact acquaintance with the constituent parts of the eye, operates the extraction or removal of the offensive substance. In this case, the hope of recovering the eye-sight, or rather the cure of the cataract, invariably rests with those two modes of operating, whatever may be the name or number of the instruments which the operator chooses. Of the above two processes, that of removal, which was well known to the ancients, alone occupied the attention of Paré.

When genius cannot create, it perfects. Ambrose Paré received from the ancients the method of operating upon cataract by depression, but he enriched it with a most important addition, the neglect of which may render the operation fruitless.

The depression of cataract is operated by two movements; one serves for the depression of the crystalline, and the other sinks it into the vitreous body, beyond the optic axis, in order to prevent its re-ascension. Paré describes this operative process in the following way:—"And, being depressed, it must be let alone, keeping it under the needle while we can say a Pater-noster, lest it should reascend and push up the diseased eye."

One of the most illustrious and expert practitioners of Europe, Professor Scarpa, that distinguished partisan of the

depression of the opaque crystalline, judiciously remarks, on this occasion, that Paré's advice is of the most indispensable importance.

It happens that, in transverse and deep wounds of the neck, the larynx and tracheal artery are divided, when the air escapes by the wound, and the voice is lost. Ambrose Paré relates that a gentleman inflicted upon himself this kind of wound; his servant was suspected, and sent to prison. When called to the assistance of the wounded man, Paré thought of immediately sewing the head to the neck, in order to bring together the edges of this dreadful wound. By these means the patient, although exhausted by the effusion of blood, recovered the use of speech, confessed his own act, and acquitted his domestic from the charges brought against him. The patient died: but Paré, by bringing together the divided edges of the tongue, showed what might be done by similar enterprise.

At the commencement of the eighteenth century, the obstetrical art was enriched with the forceps, a new instrument; but Ambrose Paré gave the idea, and the celebrated Levret and Palpin have confessed it.

Of all the cutaneous diseases, erysipelas is, perhaps, the most formidable; because its etiology and generative principle are the most difficult to discover, and it is rebellious against all the succours of art.

A person came from the country to Paris to implore the aid of Paré, so dreadfully disfigured with erysipelas, that the people, regarding him as a leper, had forbidden him to enter the church. In this case Paré had recourse to blisters, applied upon the sores themselves, with the view of changing the mode of irritation, in order to determine a specific inflammation of the cutaneous surface, which having been long fretted and encumbered by the erysipelas, had gradually lost its elasticity. It is scarcely necessary to add, that the patient was finally restored to health and to society.

Here a regard to justice, rather than to the glory of the re-

storer of surgery, compels us to remark, that, if several eminent surgeons of modern times, such as Richter, Bloch, Evers, and others, have resorted to blistering in obstinate erysipelas, they have omitted to mention the great man who originated the practice. Those who object to the simplicity of this application, have forgotten that it is the province of genius alone to be simple in its means, and fertile in its results: a reflection equally applicable to the kind of suture added by Desault to the instruments which he invented for the ligature of polypi, and which was first described by Paré.

The life of Paré, rich in facts, and strewed with various events, is like a brilliant parterre, in which the gifts of Flora dispute our regards and our love. There is, however, one memorable trait in his life, which demands our attention and our just eulogiums.

Ye vain and frivolous men, who, bent beneath the weight of an useless existence, seek to hide your nonentity, by directing injurious sarcasms against the ministers of health, open the annals of our history, read those pages which detail the disasters of France when assailed by an ambitious monarch; who, joining stratagem to force, was too often the successful rival, and sometimes even the conqueror of our kings.

Charles V. in person, besieged Metz with an army of 120,000 combatants. Seconded by the courage and heroic constancy of the inhabitants, under the command of a chief as valiant as he was skilful, a handful of brave men had sworn to die at the post of honour. But it was in vain that the soldiers enquired for the good Ambrose Paré: they demanded their friend, their comforter, the surgeon whose dexterous hand had so often stopped the effusion of their blood on the field of battle. "Send us Paré," they exclaimed with the accents of despair. Noble defenders of your country, calm your fears, your cries have reached the ear of the king, and the wish of his brave soldiers is accomplished. Orders are given, the proper measures are taken, and, thanks to the infidelity of an officer of the enemy, Paré was introduced into the place. His arrival

was hailed as a blessing from heaven. Paré arrives, Paré is in the town, and he shows himself at the breach! Soldiers and generals all press around him, and lavish upon him the expressions of the most tender regard. If they happen to be wounded, they no longer fear death; Paré is in the midst of them, his presence electrifies all hearts, generates a noble enthusiasm and a generous devotion. The enemy's army is wasted away before Metz, and the bulwark of France is preserved.

Let us cite another noble trait, which will not disparage the above: it is worthy of the great man who was constantly himself, i. e. the experienced surgeon, the loyal subject, and always superior to fortune.

Besieged by a numerous army, and reduced to the last extremities, Hesdin opened its gates to the enemy. Paré was then in the place. Being made prisoner by the Spaniards, his first thought was to disguise himself, and thus, at once, to disappoint their avaricious views for his ransom, and restore himself to the service of his prince and his country. He relates the dangers to which he was exposed with his usual candour. Actuated by motives of humanity, he offered his services to Signior Martigues, a Spanish officer, to dress a gunshot wound which had penetrated into the cavity of the thorax. Being compelled to explain himself as to the severity of the wound, and the curative means which he had employed, Paré, like a good anatomist and experienced practitioner, predicted that the patient would soon die. The event justified his prognostic. The opening of the body, which he never undertook except upon the most urgent solicitations, convinced the assistants with how much precision and justice he had indicated the course of the lacerating body, the name and nature of the parts wounded, and the seat of the consecutive accidents, which had rapidly brought on the fatal catastrophe.

Such a display of talent ought to have revealed to the emperor's physicians, that it could be no other than Ambrose Paré who now stood before them in the garb of misery. They

were not, as it happened, endowed with so much penetration; but, recognizing, in the medical attendant of Signior Martiguca, an expert operator, at their instigation the Duke of Savoy, who commanded the Spanish army, offered him an appointment; but he nobly answered that he never would serve under a foreign prince. Happily for him, another officer of the enemy's army requested and obtained permission to employ him in the cure of a varicose ulcer in the leg, the progress of which had been attempted to be arrested in vain. After an attentive examination of this obstinate disease, after having fixed upon the causes, the nature, and complications, he established a simple and methodical plan of cure. This was by means of compression, and the moderns have added nothing to the process which Paré then adopted.

Paré obtained his liberty as the reward of his skill, and the patient was restored to health.

For many centuries it has been remarked, that to err is the lot of humanity; and this maxim has been proved even by the disputes of the most illustrious men.

Paré, contrary to the doctrine of Pineau, had denied the possibility of the separation of the bones of the pelvis in difficult labours: a disjunction slowly prepared by natural laws, which a multiplicity of facts have now placed among the number of practical facts. Paré united talents and candour, he ascertained and confessed that he was mistaken. What he has left upon this subject is dictated by that noble spirit of frankness which leaves no cause for triumph to his adversary.

Born amidst those days of trouble and misfortunes, when Christians, divided in opinions, massacred each other in the name of the God of Peace and Good Will; Paré seemed destined to witness the perpetuation, in a rapid succession of kings unworthy of the throne, of weakness, versatility, fanaticism, and corruption. What did it signify to religious fanatics if Paré was the prince of surgery, the ornament of his age, and the benefactor of humanity? He was born a Calvinist, and he followed the religion of his fathers. This was enough—it was resolved that he should die.

He escaped the massacre of St. Bartholomew by a perfect miracle: owing his safety to the gratitude, or rather to the selfishness, of Charles IX., whose life he had once saved, and who had no confidence in any other surgeon.

At this disastrous period, when fanaticism lighted up the fire of civil war in France, the plague, that formidable weapon of vengeance in the hands of Providence, exercised its ravages, and filled up the cup of misery to our afflicted country. Driven from city to city by this destructive scourge, Charles IX. at length consulted the oracle of surgery as to the best method of stopping its career. Paré obeyed his majesty's commands, by publishing a clear and methodical work, being the result of his observation and experience; and the exactitude of his details may be the more relied on, as, during the three years of his being surgeon to the Hotel-Dieu, he attended a number of individuals of every age and sex, and he was himself seized with this dreadful malady.

Sustained by sincere and unaffected piety, of which his life was a perfect model, and by a courageous zeal which never gave way to any sense of personal danger, when the welfare of another was at stake, Paré shut himself up in that sacred asylum, which religion and humanity keep constantly open for diseased indigence. Here, in this domicile of disease and death, he was seen to exert all the faculties of his soul, and all the resources of his art; and once more he turned the lessons of misfortunes to the advantage of mankind.

Good from instinct, and virtuous without effort, never was the purity of his morals called in question: it may be said, in short, that he breathed in an atmosphere of kindness. His soul was poured forth in his consolatory discourses. He was, in short, the good man described in the holy writings, "whose heart was a continual feast unto him." Piety crowned all his other virtues, and made him always regard the sovereign Author of all things, as the only object towards whose glory all his thoughts and labours ought to tend. Paré, sincerely religious as he was in this respect, exhibited a striking resemblance to the sage of Cos,

It was impossible that the union of so much virtue, talent, and success, should not raise Paré to a high degree of consideration. Envy and malice raised their shafts against him it is true; but, in spite of the ebullition of human passions, he had the glorious satisfaction to witness the commencement of his immortality. Time and experience, the supreme judges of opinions, made his doctrines be received as oracles, and his precepts became the fundamental laws of the surgical art.

All were compelled to resemble Paré, all hastened to embrace his doctrines, not always perhaps because they thought them the best, but because they were popular with prince and people. They at length saw in Paré, not only the restorer of surgery, but a man of a superior order: at the same time that the prodigies which his useful talents gave birth to every day, conquered for him the esteem of the court and of the city, the qualities of his mind also conciliated the love and veneration of the army and of the nation at large.

Such is the double influence of the rare union of talents with virtue! The admiration which this great man inspired, never diminished the respectful attachment and mild confidence which a good and sensible man never fails to inspire.

Recommended as much by the virtues as by the success of their author, shining with every kind of merit, honoured by the suffrages of the learned of all countries, the works of Paré became the archives of good surgery: he could not certainly receive a better eulogy, or a more gratifying recompense. Happy would it have been for mankind if his labours had always been the objects of meditation and respect.

Deprived of the great man who had raised her to the dignity of an art and science, Surgery was still mourning over the tomb of her beloved Paré, when she was menaced with a new misfortune—that of falling back into the night of chaos! The sight of the rich inheritance which he left had softened the bitterness of her grief: she flattered herself that the valuable legacies of her restorer, which his successors had hailed with marks of respect and gratitude, would have been the

source of new prosperity. Unfortunately these expectations were not realized, and it is but too true, that, after the death of Paré, as is well observed by professor Richerand, the surgical art made a retrograde movement.

Paré was at once too virtuous and too superior to his age, not to be frequently the butt of calumny and envy. But, if he had to contend against unjust adversaries, to repel the continued assaults of ignorance, prejudice, and calumny, how ample were his grounds of consolation in the flattering suffrages of confidence and attachment which were heaped upon him by his countrymen of all ranks. Raised to that degree of consideration and celebrity, beyond which the most ambitious man could not have aspired; he was nevertheless assiduous in the performance of the duties of his painful and honourable profession. Although attached by his title and functions to the person of his sovereign, he was nevertheless the friend of the humblest individual in the army, or, in his country at large; or rather he was the friend of civil and military surgery at large.

Foreigners envied France the possession of such a man, and frequently required the aid of his talents, which he never refused. Mons and many other famous cities were indebted to him for prolonging the days of many of their wounded heroes; and, in the midst of their public rejoicings, have loudly proclaimed their grateful recollection of the name of Paré. So true it is, that men, eminent for splendid talents and active benevolence, are born less for the ornament than for the real happiness of the world.

Ambrose Paré found in his own genius the means of restoring, and perhaps of creating, surgery; and, in his good and sensible mind, an instinctive benevolence, an irresistible desire for diffusing it, and a zeal indefatigable, which knew no bounds but those which moral and physical limits prescribe. His frank, noble, and generous heart, his just and firm mind, his inexhaustible good nature, are depicted in his works, which attract, doubly, from their real merit, and from the

charms which they derive from the simple and concise language in which they are written.

Manes of Ambrose Paré, be pleased to regard with satisfaction this learned and illustrious assembly! If ye are sensible to the accents of admiration, respect and gratitude, receive the public and solemn homage of to-day! Deign to smile upon our efforts, after two centuries, to revivify the titles of your glory and of your immortality!

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

THE emperor Napoleon having offered a prize to the medical schools of Paris, for the best account of the nature and cure of Croup, M. Double has obtained it for a dissertation, in which, in *catarrhal croup*, he recommends repeated emetics, particularly ipecacuanha, for the purpose of giving an increased degree of sensibility to the trachea, to assist in the expulsion of the mucous and membranous concretions. Stimulant liniments and blisters to the neck and other parts of the body, dry cupping and irritating clysters, he used to answer the same purpose. Carbonate of ammonia and of potash he also found serviceable. Calomel, he says, would be an excellent remedy in this species, because it is a moderate stimulant of the lymphatic system and mucous membranes, if its action was not too slow to counteract the rapid progress of the disease. Seneka root is also of some utility in this species of the disease only, from its irritating action. Bleeding, he says, is injurious. He found sulphuret of potash to succeed in the cases in which he has given it a trial. Bleeding, general and by leeches, is the appropriate mode of combating *the inflammatory croup*. Refrigerants, as nitre and simple oxymel, and gentle laxatives, internally, with emollient poultices and fomentations to the throat, should be used. Emetics do no good. In *nervous croup*, M. Double enumerates the whole class of antispasmodics, assafoetida, musk, camphor, opium, æther, castor, hemlock, amber, oxyde of lime, &c. Some cases have appeared to derive much benefit from the liberal use of milk. As M. Double before recommended stimulant liniments to increase the irritability of the trachea, &c. so he would now employ them to take off the spasm of the same parts. The inhalation of vapour, medicated with æther, opium, or cicuta, and pediluvia rendered a little irritating by the addition of mustard, are also said to be serviceable.—*Lond. Monthly Mag.*

M. Deschamps, an agriculturist and botanist of Lausanne, has announced to the Society of Agriculture, Natural History, and useful Arts, of Lyons, some interesting experiments on the culture of the tea plant of Japan, and which convinces him that it will succeed perfectly well in Europe, if care be taken to sow it in a proper soil and climate. M. Deschamps, accompanied his paper with directions to gather and prepare the plant for use. Having analysed it, he discovered that it contained neither tannin nor gallic acid, principles which common tea contains, and to which is ascribed the property of affecting the nerves, and occasioning tremulous sensations. The disagreeable taste which some persons find in the tea of Japan, has also been corrected by M. Deschamps, by throwing boiling-hot water over the leaves, pouring it off in two or three minutes, and then infusing them in boiling water in the usual way.—*Lond. Monthly Mag.*

On Thursday, 26th May, 1814, a paper, by Sir Everard Home, bart. on the effect of different Injuries in the Brain upon Sensation, was read before the Royal Society. The attempts to determine the functions of the different parts of the brain not having been attended with success, Sir Everard conceives that it would promote the advancement of physiology if medical men were to collect together, and arrange the effects produced by different diseases or injuries of the brain. The present paper contains the result of his own practice. It is divided into ten sections. 1. On the effect of water accumulated in the ventricles. Water accumulated in the ventricles, even to the amount of six and a half ale pints, does not destroy the faculties, provided the bones of the cranium be not united, and the head enlarged according to the accumulation. A curious case was related of a young man whose head had increased enormously, and who retained his faculties entire, except some inconveniences from the size and weight of the head. He was in his nineteenth year, and the head was thirty-three inches in circumference. When the bones of the

cranium, being united, prevent the head from enlarging, the accumulation of water in the ventricles destroys the faculties, and produces idiotism and death. 2. On the effects of concussion. It occasions nausea and vomiting, giddiness and apoplectic fits, which return at intervals for some time. 3. On the enlargement of the blood vessels of the brain. It occasions violent headaches, watchfulness, and disorders of the bowels. The beating of the arteries of the brain has been supposed essential to the exertion of the senses; but John Hunter retained his senses after the heart had apparently ceased to beat. 4. On the extravasation of blood. It produces similar effects as the accumulation of water; coma, nausea, apoplexy. 5. On the effects of the formation of pus. It occasions melancholy, lowness of spirits, and mania, with incessant talking. 6. On the effects of external pressure. The depression of the skull occasions loss of memory, the incapacity of using the proper conversation, &c. all which disappear when the cause is removed. 7. Internal pressure from tubercles produces similar effects. 8. Hydatids in the brain occasion bowel complaints, and a comatose state of the rectum and bladder. 9. Wounds in the brain occasion no symptom whatever, nor the destruction of any of the faculties. When a fungous excrescence of the brain takes place through a hole in the skull, the œsophagus becomes so sensible as to prevent the swallowing of solids, from the pain which they occasion. 10. Injuries of the spinal marrow in the neck, occasion paralysis of all the parts of the body below the injury.

An account of the diuretic powers of the *Pyrola umbellata* of North America, was read at the last meeting of the Medico Chirurgical Society. This plant has been long since used by the Indians, in cases supposed to arise from defective secretion of urine, and promises to be a valuable acquisition to the materia medica. It has the property of increasing the appetite, and has been found serviceable in some cases of dropsy.

We understand a case of the successful treatment of trismus, has lately occurred at the Westminster Hospital. A robust young man was brought in with his jaw firmly locked, in consequence, as was supposed, of the bite of a dog, between the finger and thumb. It was resolved to try the effect of copious bloodletting. He was bled from the arm till he fainted, which was evidently followed by a relaxation of the jaw. Next day he was cupped behind the ears, and upon the back, till the same effect took place. The jaw now opened almost half an inch, and he was enabled to take some nourishment, but the contraction returned towards evening. The third day he was again bled from the arm *ad deliquium*. The disease was now so far removed, that he was able to make a hearty dinner of boiled salmon, and drink some porter. Hearing some conversation about bleeding him the next day, to which he was always very averse, having no sense of his danger, he left the hospital without leave. It is known, however, that he perfectly recovered, and is now quite well. He lost in all about sixty ounces of blood. The only medicine he took was a grain of tartarized antimony with two grains of opium each night at bed-time. Though this may not be considered as a very decided case of that species of trismus which has almost invariably proved fatal, it at least affords encouragement to give the same remedy a more full trial than it has hitherto experienced.

Dr. Whitredge informs one of the editors of the New England Journal of Medicine and Surgery, that he performed the operation of tying up the external iliac artery for an aneurism in the groin, at Sacket's Harbour, on the 8th of January, and that the appearances of the patient promised a successful event.

We trust Dr. Whitredge, will favour the public with a minute account of this very interesting case.

UNIVERSITY OF PENNSYLVANIA.

LIST OF MEDICAL GRADUATES, APRIL, 1815.

Pennsylvania.

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|--------------------------------|---|
| 1. Mordecai Morgan, | { on the Influence of derange-
ments in the functions of the
Liver, &c. |
| 2. Peter Reubel, | { on the Modus Operandi of Me-
dicines. |
| 3. Joseph Coates, | on Typhus Fever. |
| 4. William P. Palmer, | on the Polygala Senega. |
| 5. Isaac C. Snowden, | on Mania a Potu. |
| 6. J. Horwitz, | on Colic. |
| 7. Edward P. Williams, | on the causes of Sudden Death. |
| 8. George Uhler, | on the cure of Hæmorrhage. |
| 9. Anthony Benezet, | on the Conium Maculatum. |

Maryland.

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|----------------------------|---|
| 1. John H. Thomas, | { on the development of some of
the functions of Life. |
| 2. George Frick, | on the Meloe Vesicatorius. |
| 3. John Gwinn, | on the Fœtal Circulation. |
| 4. John G. Purnel, | on the Pothos Putorii. |

District of Columbia.

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|----------------------------------|---------------|
| 1. Nicholas Worthington, | on Tetanus. |
| 2. Edward B. Addison, | on Dysentery. |

Virginia.

- | | |
|-----------------------------------|--|
| 1. Joshua Smith, | { on the comparative merits of
Mercury, &c. |
| 2. Gustavus A. Brown, | on Dysentery. |
| 3. James H. Conway, | on Arsenic. |
| 4. William A. Patterson, | { on the Suppression of Hæmor-
rhage. |
| 5. William Minton, | on Nephritis. |
| 6. William Hereford, | on Digitalis. |
| 7. Jesse A. Bonner, | on Cynanche Trachealis. |
| 8. William Boswell, | on the Prunus Serotina. |
| 9. Patrick Macaulay, | on Emetics. |
| 10. Daniel W. Norton, | on Typhus Fever. |
| 11. John Y. Stockdell, | on the Mercurial Disease. |
| 12. Nathaniel L. Holländ, | on Apoplexy. |

Virginia.

13. William A. Dupuy, . . . on Enteritis.
14. John M. Wells, . . . on Bathing.
15. William Owen, . . . on the Mercurial Disease.
16. Thomas G. Peachy, . . . on Uterine Hæmorrhage.
17. John H. Wallace, . . . on Rheumatism.
18. Nathaniel C. Whitehead, . . . { on the Influence of the Pas-
sions, &c.
19. Paul C. Venable, . . . on Antimony.
20. Robert L. Baldwin, . . . on the Puerperal Fever.

North Carolina.

1. David E. Jiggitts, . . . on Dysentery.
2. Alexander Long, . . . on Hydrocele.

South Carolina.

1. Thomas W. Roper, . . . on the Aneurism of the Aorta.

Georgia.

1. William C. Daniel, . . . { on the Structure of the Placenta, &c.
2. Benjamin A. White, . . . on Inflammation.

New Orleans.

1. John O. B. Lawrence, . . . { on the Fracture of the Thigh Bone.

Kentucky.

1. William Shert, . . . on the Juniperus Sabina.

New Jersey.

1. Charles Swing, . . . on Asthma.

Connecticut.

1. Edward Barton, . . . on Fistula in Ano.

*Officers of the American Philosophical Society.**President.*

Caspar Wistar.

Vice-Presidents.

Robert Patterson, Benjamin Smith Barton,
Jonathan Williams.

Secretaries.

Thomas C. James, Thomas T. Hewson,
Robert M. Paterson, Nathaniel Chapman.

Counsellors for three years.

Nicholas Collin, William Tilghman,
Andrew Ellicott, William Meredith.

Counsellors for two years.

Thomas Cooper, James Gibson,
Edward Pennington, Robert Hare.

Counsellors for one year.

William White, Peter S. Duponceau,
Jonathan Williams, Horace Binney.

Curators.

Zaccheus Collins, Joseph Cloud,
William Hembell, Jun.

Treasurer.

John Vaughan, who is also *Librarian*.

PHILADELPHIA DISPENSARY.

Managers Elected, January 1815.

William White, President,
Lawrence Seckel,
Robert Blackwell,
Henry Helmuth,
Robert Smith,
Robert Ralston,
Godfrey Haga,
Ebenezer Hazard,
Isaac Snowden,
Joseph Crukshank,
Elliston Perot,
Samuel P. Griffitts, Secretary.

Officers Elected, January 1815.

Attending Physicians and Surgeons.

Doctor Joseph G. Shippen,
Joseph Woollens,
Aaron B. Tucker,
David Jones Davis,
Samuel Emlen, Jun.
Thomas Chandler.

Consulting Physicians and Surgeons.

Doctor Thomas Parke,
Caspar Wistar,
Philip S. Physick,
Thomas C. James.

Treasurer.

John Clifford.

Apothecary.

George G. Tresse.

VACCINE SOCIETY.

By the annual report of the managers made January 1815, it appears, that one thousand and fifty-three persons have been successfully vaccinated by the physicians of the institution in 1814; which, added to the patients of the preceding years, gives a total of six thousand five hundred and sixty-one.

HUMANE SOCIETY.

Philadelphia, March 8, 1815.

At a general meeting of the Members of the Humane Society of Philadelphia, held on the 1st inst. agreeably to their act of incorporation, and to public notice, the following persons were duly elected Managers for the present year, viz.

Joseph Crukshank,	Samuel Pancoast, Jun.
Charles Marshall,	William Leedom,
Benjamin Thaw,	Matthew L. Bevan,
Dr. Thomas C. James,	William Hembell, Jun.
Dr. Joseph Parrish,	Benjamin Jones, Jun.
Dr. John W. Moore,	Isaac Snowden.

At a meeting of the Managers, this day, the following Officers were chosen:

Joseph Crukshank, *President.*
 Joseph P. Hornor, *Treasurer.*
 Isaac Snowden, *Secretary.*

Inspectors of the Apparatus.
 William Hembell, Jun.
 William Leedom.

Committee of Correspondence.
 Doctor Thomas C. James,
 Joseph Parrish,
 John W. Moore.

Abstract of the Bill of Mortality, for the town of Boston, from the 31st December, 1813, to the 1st January, 1815—agreeably to the Record kept at the Health Office.

		Under 1 year		163
January, - - - -	63	1 to 2	-	76
February, - - - -	53	2 to 5	-	53
March, - - - -	65	5 to 10	-	28
April, - - - -	56	10 to 20	-	35
May, - - - -	44	20 to 30	-	114
June, - - - -	40	30 to 40	-	87
July, - - - -	63	40 to 50	-	56
August, - - - -	79	50 to 60	-	33
September, - - - -	51	60 to 70	-	25
October, - - - -	100	70 to 80	-	35
November, - - - -	66	80 to 90	-	21
December, - - - -	48	90 to 100	-	1
<hr/>		<hr/>		
Total, - - - -	727	Total, - - - -		727

The Deaths above were caused by Diseases and Casualties, as follows:—

Anasarca, - - - -	17	Hepatitis, - - - -	3
Apoplexy, - - - -	3	Hooping Cough, - - - -	5
Burns and Scalds, - - - -	5	Hydrocephalus Internus, - - - -	3
Casualty, - - - -	3	Hydrophobia, - - - -	1
Cholera Morbus, - - - -	2	Infantile Diseases, - - - -	208
Cholera, - - - -	1	Insanity, - - - -	2
Consumptions, - - - -	153	Jaundice, - - - -	2
Convulsions, - - - -	1	Mortification, - - - -	8
Cramp, - - - -	2	Neurosis, - - - -	1
Croup, - - - -	2	Old Age, - - - -	39
Cynanche Trachealis, - - - -	1	Paralysis, - - - -	9
Debility, - - - -	1	Phrenitis, - - - -	1
Disorders unknown, - - - -	13	Quinay, - - - -	10
Drowned, - - - -	10	Scrofula, - - - -	1
Dysentery, - - - -	4	Spasm, - - - -	1
Fever Inflammatory, - - - -	3	Still Born, - - - -	32
Bilious, - - - -	6	Sudden, - - - -	14
Puerperal, - - - -	6	Suicide, - - - -	1
Pleurisy, - - - -	3	Teething, - - - -	1
Pulmonic, - - - -	26	Tetanus, - - - -	2
Typhus, - - - -	77	White Swelling, - - - -	1
Fits, - - - -	11		
Gout, - - - -	2		
		<hr/>	
		727	

Published by order of the Board of Health,

NATHANIEL GREENOUGH, Sec'ry.

Boston, January 10, 1815.

VOL. V.

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No. 18.

Abstract of the Bill of Mortality for the City of Baltimore, from the first of January, 1814, to the first of January, 1815, agreeably to record, kept in the Office of the Commissioners of Health.

January, - - - - 101	Under 1 year - 249
February, - - - - 82	From 1 to 2 - 115
March, - - - - 98	2 to 5 - 70
April, - - - - 110	5 to 10 - 41
May, - - - - 83	10 to 20 - 76
June, - - - - 62	20 to 30 - 179
July, - - - - 107	30 to 40 - 167
August, - - - - 92	40 to 50 - 115
September, - - - - 111	50 to 60 - 49
October, - - - - 125	60 to 70 - 89
November, - - - - 76	70 to 80 - 35
December, - - - - 105	80 to 90 - 25
	90 to 100 - 2
Total, - - - - 1153	Total, - - - - 1152

The Deaths above were caused by Diseases and Casualties, as follow:

Apoplexy, - - - - 6	Dysentery, - - - - 6
Cancer, - - - - 1	Fits, - - - - 80
Consumption, - - - - 225	King's Evil, - - - - 1
Croup, - - - - 25	Liver Inflammation, - - - - 7
Colic, - - - - 18	Locked Jaw, - - - - 1
Casualties, - - - - 15	Mortification, - - - - 3
Child Birth, - - - - 15	Murder, - - - - 2
Cholera Morbus, - - - - 102	Old Age, - - - - 69
Drowned, - - - - 12	Pleurisy, - - - - 110
Dropsy, - - - - 36	Palsy, - - - - 5
Fever Bilious, - - - - 113	Quinsy, - - - - 1
Typhus, - - - - 56	Rheumatism, - - - - 2
Scarlet, - - - - 1	Scurvy, - - - - 1
Inflammatory, - - - - 3	St. Anthony's Fire, - - - - 1
Nervous, - - - - 3	Suicide, - - - - 1
Gravel, - - - - 1	Still Born, - - - - 70
Hooping Cough, - - - - 21	Sudden, - - - - 5
Hives, - - - - 1	Teething, - - - - 4
Insanity, - - - - 2	Worms, - - - - 85
Inward Bleeding, - - - - 2	Unknown, - - - - 39
Jaundice, - - - - 1	
	Total, - - - - 1152

In the above bill, the deaths of the army are not included.

By order of the Board of Health,

SAMUEL VINCENT, Sec'ry.

Baltimore, January, 6, 1815.

Bill of Mortality in the City of New-York.

The City Inspector reports the death of one thousand nine hundred and seventy-four persons in the city of New-York, of various diseases from the 31st of December, 1813, to the 31st of December, 1814—of whom were:

Adults,	{ Men,	-	-	593
	{ Women,	-	-	523
				<hr/> 1116
Children,	{ Boys,	-	-	469
	{ Girls,	-	-	389
				<hr/> 858
				<hr/> 1974

Of whom 407 were of the age of one year and under—160 between 1 and 2—132 between 2 and 5—91 between 5 and 10—94 between 10 and 20—280 between 20 and 30—245 between 30 and 40—218 between 40 and 50—133 between 50 and 60—91 between 60 and 70—84 between 70 and 80—35 between 80 and 90—2 between 90 and 100—and 2 of 100 and upwards.—Total 1974. Of these 572 died of Consumption.

DIED.

At Auteuil near Paris in the month of August, 1814, of a nervous fever, BENJAMIN THOMPSON, Count Rumford, in the sixty-first year of his age.

In Philadelphia, in December 1814, Doctor SAMUEL DUFFIELD, aged eighty-two years.

In the month of January, 1815, Doctor ROBERT HARRIS, aged eighty-five years.

In Boston, in April, 1815, JOHN WARREN, M. D. aged sixty-four, President of the Massachusetts Medical Society, and Professor of Anatomy in Harvard University.

FOR THE ECLECTIC REPERTORY.

Statement of Deaths, with the diseases and ages, in the City and Liberties of Philadelphia, from the 1st of January 1814, to the 1st of January 1815.

DISEASES.	Under 1 year	From 1 to 8	From 8 to 15	From 15 to 20	From 20 to 30	From 30 to 40	From 40 to 50	From 50 to 60	From 60 to 70	From 70 to 80	From 80 to 90	From 90 to 100	From 100 to 110	Total
Aphtha	2	0	0	1	0	0	0	0	0	0	0	0	0	3
Abortion	3	0	0	0	0	0	0	0	0	0	0	0	0	3
Asthma	0	0	0	0	0	1	2	0	0	2	0	0	0	5
Abscess	0	0	0	1	0	1	3	1	0	0	0	0	0	6
Aneurism	0	0	0	0	0	0	1	1	2	0	0	0	0	4
Apoplexy	0	0	0	0	0	1	5	7	6	3	3	1	0	25
Atrophy	7	3	2	1	2	2	8	0	6	4	0	0	0	35
Burns	3	2	3	1	1	0	0	0	1	0	0	0	0	12
Cancer	0	0	0	0	0	1	5	3	6	1	3	0	0	19
Casualties	1	0	0	1	2	1	3	1	3	1	1	0	0	14
Catarrh	9	1	1	0	0	2	3	0	1	0	2	0	0	19
Child Bed	0	0	0	0	1*	3	1	1	0	0	0	0	0	6
Cholera Morbus	65	37	20	1	2	0	0	2	0	0	0	0	0	127
Colic	0	0	1	0	0	1	1	1	0	0	0	0	0	5
Consumption of the Lungs	11	6	6	7	21	54	77	46	28	10	7	1	0	274
Convulsions	141	11	7	3	0	1	7	1	1	1	0	0	0	174
Caries	0	0	0	1	0	0	1	0	0	0	0	0	0	2
Cachexy	0	0	0	1	0	0	1	1	0	0	1	0	0	5
Decay	6	5	2	1	4	7	5	5	3	1	4	3	0	46
Diarrhea	0	4	1	0	0	1	1	3	5	6	1	0	0	25
Dropsy	0	0	2	2	1	5	8	5	2	6	3	1	0	35
of the Breast	0	1	0	0	0	3	6	8	2	5	4	0	0	29
in the Brain	15	8	10	6	0	1	0	0	0	0	0	0	0	40
Drowned	1	0	1	1	2	1	8	3	3	0	1	0	0	21
Dysentery	12	11	7	4	4	3	6	5	5	4	3	2	0	66
Drunkenness	0	0	0	0	0	1	2	1	1	0	0	0	0	5
Disease in Knee Joint	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Debility	12	1	2	0	0	1	4	3	5	8	7	4	1	48
Epilepsy	1	0	1	0	1	1	1	1	0	0	0	0	0	7
Erysipelas	0	0	1	0	1	0	0	0	0	0	0	0	0	4
Fracture	0	0	0	0	2	0	0	0	0	0	1	1	0	4
Fever	3	2	5	2	2	1	1	2	2	4	1	0	0	25
Intermittent	0	1	1	0	0	1	1	1	0	0	0	0	0	5
Remittent	0	1	0	1	0	3	0	1	3	3	0	0	0	12
Bilious	0	0	0	1	0	0	1	2	0	0	0	0	0	4
Nervous	1	1	0	0	4	3	2	1	0	1	0	0	0	13
Malignant	1	0	1	0	2	0	0	1	2	0	0	0	0	7
Typhus	2	2	1	1	9	13	25	18	11	7	4	0	1	94
Puerperal	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Pneumonia	0	0	1	0	0	4	0	0	0	0	0	0	0	5
Inflammatory	0	1	1	0	0	3	0	0	1	0	0	0	0	6
Mortification and Gangrene	4	0	2	0	1	3	2	0	1	3	0	1	0	17
Gout	0	0	0	0	0	0	0	0	1	1	0	0	0	2
Gravel	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Carried over,	302	98	79	37	62	124	190	127	99	71	53	17	3	1262

* Sixteen years of age.

Statement of Deaths continued.

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	Under 1 year	From 1 to 2	From 2 to 5	From 5 to 10	From 10 to 20	From 20 to 30	From 30 to 40	From 40 to 50	From 50 to 60	From 60 to 70	From 70 to 80	From 80 to 90	From 90 to 100	From 100 to 110	Total
<i>Brought forward,</i>	302	98	79	37	62	124	190	127	99	71	53	17	3	0	1962
Gun-shot Wound	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Hooping Cough	7	6	8	2	0	0	0	0	0	0	0	0	0	0	23
Hives	14	2	5	0	0	0	0	0	0	1	0	0	0	0	22
Hernia	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
Hæmorrhage	0	0	0	1	0	0	4	1	2	1	0	0	1	0	10
Hydrophobia	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Inflammation of the Brain	1	0	1	1	1	3	2	0	1	0	0	0	0	0	11
of the Lungs	1	2	1	0	0	0	1	1	0	0	0	0	0	0	6
of the Stomach	7	3	1	0	0	0	2	2	1	3	1	0	0	0	20
of the Bowels	12	2	1	2	0	2	0	2	2	1	0	0	0	0	24
of the Liver	5	1	1	0	0	1	7	2	3	3	0	1	0	0	24
Insanity	0	0	0	0	0	2	8	7	3	2	0	0	0	0	22
Jaundice	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Locked Jaw	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
Measles	5	2	0	1	0	1	0	0	0	0	0	0	0	0	9
Old Age	0	0	0	0	0	0	0	1	0	7	13	22	14	2	59
Pleurisy	14	1	2	2	2	9	6	14	2	8	4	1	0	0	65
Palsy	0	0	0	0	0	1	1	2	2	5	6	1	0	0	18
Rheumatism	1	0	0	0	1	1	1	1	0	2	1	0	0	0	8
Serofula	1	0	1	1	4	1	2	2	1	0	0	0	0	0	13
Sore Throat	7	1	1	1	0	1	1	0	0	0	0	0	0	0	12
Still Born	96	0	0	0	0	0	0	0	0	0	0	0	0	0	96
Suicide	0	0	0	0	1	0	2	1	1	0	0	0	0	0	5
Sudden	4	0	1	0	0	3	6	4	3	1	0	0	0	0	22
Syphilis	0	0	0	0	0	2	0	2	0	0	0	0	0	0	4
Strangury	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Teething	4	3	1	2	0	0	0	0	0	0	0	0	0	0	10
Ulcers	0	0	0	1	1	1	2	0	1	0	0	0	0	0	6
Wounds	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Worms	1	1	1	1	0	0	0	0	0	0	0	0	0	0	4
Unknown	2	0	0	0	0	1	2	2	1	0	0	0	0	0	8
<i>Total,</i>	486	122	104	53	72	154	239	175	122	106	78	42	18	2	1773

NOTE. Of the above there were 540 males of twenty years and upwards, 373 under twenty years: of females, 425 of twenty years and upwards, 289 under twenty years, and 156 children, principally under one year, whose sex is unknown. To the above may be added, 354 which were not received at this office from the Public Burial Ground, making a grand Total 2137.

Deaths in each month of the above period.

	Adults.	Children.	Total.		Adults.	Children.	Total.
January	49	49	98	October	85	47	132
February	61	41	102	November	87	70	157
March	79	48	127	December	86	50	136
April	101	80	181				
May	57	69	126	<i>Total</i>	938	845	1773
June	71	65	136				
July	67	104	171	By order of the Board of Health,			
August	122	160	282	JOHN ALLISON, Clerk.			
September	73	62	135	Health Office, February 21st, 1815.			

RECENT BRITISH PUBLICATIONS.

The Edinburgh Medical and Surgical Journal, exhibiting a Concise View of the latest and most important Discoveries in Medicine, Surgery and Pharmacy. (Published Quarterly). No. XL. which completes volume X.

Letters to the Duke of Kent, on the Efficacy of Equable and Artificial Temperature, in the treatment of Consumption. By Thomas Sutton, M. D.

An Index to the Anatomical, Medical, Chirurgical, and Physiological Papers, contained in the Philosophical Transactions of the Royal Society of London, from 1665 to 1813; chronologically and alphabetically arranged, with brief explanatory remarks. Quarto.

A Practical Account of the Fever commonly called Bilious Remittent, as it appeared in the Ships and Hospitals of the Mediterranean Fleet, with Cases and Dissections. By William Burnett, M. D. Physician to the Fleet. Octavo.

Lectures on Inflammation, exhibiting a view of the general Doctrines, Pathological and Practical, of Medical Surgery. By John Thompson, M. D. F. R. S. E.

An Essay on Bronchitis, or Inflammation of the Secreting Membrane of the Lungs; second edition, much enlarged. By Charles Badham, M. D.

Observations on the distinguishing Symptoms of three different Species of Pulmonary Consumption: with Remarks on the Remedies and Regimen, best fitted for the prevention, removal, or alleviation of each species. By Andrew Duncan, Sen. M. D.

An Account of a successful Method of treating Diseases of the Spine, with Observations and Cases in illustration. By Thomas Baynton.

View of the Progress and Present State of Animal Chemistry. By I. J. Berzelius, M. D. Octavo.

Essay on the Theory of the Earth. By M. Cuvier. Translated from the French, by R. Kerr, F. R. S., with Mineralogical Notes. By Professor Jameson. Octavo.

Essay on Light and Vision. By John Bywater.

Essay on Electricity. By the same.

Flora Americæ Septentrionalis: or a Systematic Arrangement and Description of the Plants of North America; containing, besides what have been described by preceding authors, many new and rare Species, collected during twelve years travels and residence in that country. By Frederick Pursh. Two volumes, octavo, with coloured plates.

RECENT AMERICAN PUBLICATIONS.

A Complete Treatise on the Symptoms, Effects, Nature, and Treatment of Syphilis. By F. Swediaur, M. D. Translated from the fourth French edition, by Thomas T. Hewson, one of the Surgeons of the Alms-House. Thomas Dobson, Philadelphia.

Abernethy's Surgical Observations on Tumours, and on Lumbar Abscesses. This completes the American edition of Abernethy's Surgical Observations, in which the four volumes are comprised in two. Octavo. Thomas Dobson, Philadelphia.

A Dissertation on the Pathology of the Human Fluids. Octavo. Van Winkle and Wiley, New-York.

An edition of Benjamin Bell's Work, on the Venereal, with Notes. Octavo. E. F. Backus, Albany.

Dr. Hosack, Professor of the Theory and Practice of Physic, in the University of New-York, has recently published, "Observations on the Laws governing the Communication of Contagious Diseases, and the means of arresting their Progress." This memoir was originally read before the American Philosophical Society, held at Philadelphia; but is now published under the auspices of the Literary and Philosophical Society of New-York: considerably extended and improved by the addition of some interesting Notes. Not having received the work until this number had nearly passed through the press, we are obliged to defer a fuller account of it until the publication of our next.

PROPOSED AMERICAN PUBLICATION.

In the course of the ensuing summer will be published: *Flora Philadelphiensis: sive Enumeratio plantarum absque omni cultura crescentium, in circuitu decem miliarium in territorio Philadelphensi; additis descriptionibus, synonymicis, ac denominationibus cujuscunque earundem. Anglico idiomate exhibitis; quæ enumeratio in ordinem est redacta secundum Linnæi Systema Sexuale: auctore Gulielmo P. C. Barton, Medicinæ Doctore.*

J. G. Exillious, engraver, Philadelphia, should he receive sufficient encouragement, proposes to publish by subscription, a Series of Engravings, tending to illustrate the Generation and Parturition of the Human Species. The engravings to be selected (under the direction of the Professor of Midwifery in the University of Pennsylvania) from the Plates of Smellie, Hunter, Denman, Soemmering, and Baillie. To be published by Thomas Dobson, Philad.

THOMAS DOBSON HAS IN THE PRESS,

A Dissertation on the Influence of Change of Climate in curing Diseases; by Professor Gregory, of Edinburgh. Translated from the original Latin, and enlarged with occasional Notes. By William P. C. Barton, M. D.

Professor Cooper's Work on the Practice of Dyeing. Octavo.

THE
ECLECTIC REPERTORY
AND
ANALYTICAL REVIEW.

VOL. V.

JULY, 1815.

No III.

SELECTED PAPERS.

An account of the malignant Epidemic which has lately prevailed in the Southern States. By DR. J. NORCOM, of Edenton, North Carolina.

[Communicated by Dr. D. Hosack of New York.]

SOME time in the month of October, 1814, there appeared in this neighbourhood a fever of an extraordinary type. The first cases of it which fell under my observation, took place on Salmon creek, about two miles from the mouth of Chowan river, and ten miles from this town. After affecting several persons with different degrees of force and severity, it gradually subsided and disappeared. During its continuance, however, a remarkable circumstance occurred: the whooping cough, which prevailed in the same family, exhibited a character of a similar description, and yielded only to the influence of the same remedies that proved successful in its cure. In the month of December, as I have been informed by a respectable physician in this place, the disease occurred on Chowan river, about fifteen miles above us. In January it appeared on Salmon creek again; and, from the cases which have now and

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No. 19.

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then been seen in different parts of the country in this vicinity, it may be said to have existed *sporadically* throughout the winter.

Towards the conclusion of the year past, the same disease made its appearance in Perquimans, under a much more *malign aspect*; and has continued to prevail since with great mortality in the country contiguous. It has lately also commenced its ravages in Gates, where, I am told, it threatens to be considerably destructive. The prevalent opinion with respect to its origin in Perquimans, is, that it was first brought there from the camps at Norfolk, and was afterwards propagated by contagion. With this opinion, which, *if facts are maturely considered*, is probably as hard to be proved as refuted, it is not my intention to interfere; being fully aware of the difficulties that have ever perplexed the philosophical enquirer, on the subjects of contagion and epidemics. A candid and dispassionate investigation of the history, nature and progress of this disease (*which those who decide so hastily are the last to undertake*) is the only method by which the numerous errors and absurdities that exist on the subject, can be banished from the popular mind.

The object I have in view in trespassing upon the attention of the public, and exposing myself to the criticisms and animadversions of the learned, is to describe the disease as it has existed in my sphere of practice; and, for the benefit of those who are less (not those who are better) informed than myself, to detail the remedies which have proved advantageous and tended to the restoration of the sick.

The complaint unquestionably depends upon an epidemical or extensively morbid constitution of the air, which has been gradually acquiring force *in the neighbouring country*, since the middle of autumn: the same in all probability that has given rise to the desolating malady which has raged with such fatal malignity in many parts of Maryland and Virginia; the same which existed in America in 1775, in 1789-90, and 91, and in the winter of 1807-8; and probably the same which, in the course of the sixteenth, seventeenth and eighteenth centuries,

proved so memorably mortal in various parts of Europe and Asia. Catarrhus suffocativus and gangrenosus, angina putrida, pneumonia typhodes, influenza, and phrenitis maligna, are the technical appellations by which it has been designated in the writings of physicians. That the vicissitudes of the weather and the sensible qualities of the atmosphere, although they may have aggravated the complaint, multiplied its victims, and tended to prolong its duration, have had but little share in the production of it, is sufficiently demonstrated by the date of its occurrence, and the *uniformity of character* it has maintained throughout the different stages of its progress. To predict or to look for the termination of it in any imaginary temperature depending upon a revolution of the seasons, is, in my estimation, weak and unphilosophical! Like the epidemic of 1789, 90 and 91, and that of 1807, 8, which pervaded almost the whole of the United States, this disease appears in a variety of shapes.—Sometimes it exhibits no more than the obvious symptoms of a common catarrh; sometimes it attacks with most of the symptoms of pneumonia; often it affects the throat in the form of quinsy; and in many cases it has appeared with an affection of the head so violent, as to resemble, in no small degree, a phrenitis or inflammation of the brain. Yet in all the various forms which it has assumed, I have found it to preserve an extraordinary sameness or similitude of character. The fever attending it has *certainly*, in a very large majority of cases, been a species of typhus, as will more clearly appear in the course of the succeeding narrative and description. At all events, I feel very confident that few cases have occurred in which the antiphlogistic plan of treatment has been for any time persisted in without manifest injury. It may be confidently asserted, on the contrary, that no remedies, except those which are calculated to remove debility and to counteract the evils incident to a typhous condition, have ever been decidedly and ultimately beneficial.

Whatever form the disease assumes, it generally begins with a chilly fit, succeeded by alternate sensations of heat and

cold, and accompanied with a sense of extreme lassitude and debility. The chilliness in some has continued for a day or two; and in others has not gone off entirely until the disease gave way. In a few cases of excessive malignity the coldness has not been removed until the scene was closed. One case of this kind happened under my own immediate observation, in which the patient was hurried off in about twenty-six hours. During the coldness which ushers in the complaint, there is often a pain in the head, attended with considerable nausea or vomiting: the vomiting, I have remarked, was most troublesome when the head has been most painfully affected. The matter discharged by vomiting is sometimes bile; sometimes a viscid phlegm only, mixed with the patient's drink or the common contents of the stomach. I have not considered the vomiting and occasional bilious discharges that take place in this fever, as affording any evidence of hepatic affection: it has seldom been more lasting or severe in the cases that have engaged my notice, than the vomiting that occurs in nephritis, in inflammation of the uterus, in the ague of an intermittent, or in the commencement of many inflammations in which the liver takes no share or concern. May it not rather be regarded as a sympathetic symptom, produced by the impression of the complaint on the brain, or depending upon the coldness and constriction of the cutaneous surface so frequently attending?—A diarrhoea now and then attends and is generally unfavourable. If the disease makes its first attack in the throat, it sometimes descends into the chest in the course of a day or two, producing a suffocating cough and breathing: when the pain leaves the throat and fixes itself in the breast about the fourth day, death very soon follows; when the breast is the seat of the disease the patient feels a pain in some part of the thorax; sometimes in the right, sometimes in the left side, but oftener about the centre of the sternum. The pain is seldom very acute, often so inconsiderable as not to be constantly felt or observed. In this pleuritic form a cough usually attends which fatigues without relieving; and, in violent cases,

seems to have little effect, except that of increasing the shortness and anxiety of breathing, which incessantly aggravate the sufferings of the patient. A delirium has been less frequent in this than in any other disease of equal violence which I have ever seen. In weak and relaxed constitutions there is often a large effusion of mucus in the bronchiæ, which gives rise to a loose cough; and, as the disease progresses and respiration becomes more embarrassed, creates a troublesome rattling in the throat for many hours before death. In constitutions of more vigour and firmness, the cough is less humid, sometimes dry and hoarse: the greater the exertion and fatigue attending the cough in general the greater is the danger. The disease in the throat is for the most part attended, particularly when it is violent, with considerable swelling on one or both sides of the neck externally, of an œdematous hardness with an erysipelatous surface. When this swelling descends to the chest and exhibits a livid colour, the greatest danger may be apprehended. The throat internally is more or less tumefied and inflamed: but the lining membrane, instead of a florid or crimson colour, discovers a clay or umbre-coloured redness with little ulceration or pain. Aphthous spots or pimples on the fauces I have occasionally seen; but small, dry, and darkish excoriations of the membrane have been by far more frequent. The internal swelling of the throat has rarely been alarming in any of the cases which it has been my lot to witness; never so excessive as to threaten suffocation. The inflammation of the throat in cases of a threatening complexion is probably seldom glandular; for it scarcely ever terminates in suppuration. When the head is chiefly affected the swelling in the face is sometimes so great as to close one or both of the eyes in a few hours. In a large number of cases the tongue is moist and of a whiteness inclining to a leaden or yellow colour: near the root of it the colour seems gradually to become yellower. In some instances it is dry and brown, and in others assumes a dark or livid appearance. The diversified forms of this disease have presented a corresponding diversity in the pulse. In

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Generally speaking, its fatal termination is about the fourth or fifth day. The patient almost always dies with the symptoms of pneumonia notha.

The causes that have given rise to a predisposition to the disease, and have been principally instrumental in its production, are excessive fatigue, great and long continued exposure to cold, violent exercise, sitting up at night, irregularities of living and intemperance of every kind, *more especially intoxication*: in short, every thing which has a tendency either *directly* or *indirectly* to induce debility or to weaken the vital powers. The persons who have suffered most from the influence of this terrible scourge, have been the aged and the infirm, such as have been previously reduced by lingering and chronic affections, the indolent, the dissipated and the poor. Among this last description of people, who have been exposed to innumerable privations and hardships in the course of the present inclement and afflicting season, its devastations have been cruel and irresistible. Hard drinkers have acted a conspicuous part in this melancholy drama. The young and vigorous, whose habits have been regular, if their constitutions had not been previously impaired, have either had the disease lighter, or escaped it entirely. Healthy children can hardly be enumerated among its victims.

In the treatment of the disease much may be accomplished by due and seasonable attention to its symptoms. All the milder forms of it, in which I have seldom failed to observe the most manifest indications of a typhous state, have invariably yielded to anodyne, stimulant and tonic medicines, as they are generally used in regular practice; many of the severer cases have ended favourably under the same treatment accommodated to the greater severity and urgency of the symptoms: but in cases of the greatest violence, the malignity and rapid progress of the complaint have been such as to baffle the most skilful exertions and to defy the most active opposition. Happily for the community the number of these alarming cases has not been very great: not greater perhaps than

one in nine or ten of those that have been confined; or, if all the slighter affections of the head, throat and breast which appear to be derived from the same source and to partake of the prevailing typhous character are taken into the account, not more than three or four in an hundred. Of those that have been most dangerously affected perhaps not more than three in twenty have survived.

When I have been called upon to prescribe for a patient labouring under the disease, my first attention has been directed to the state of the pulse and respiration, and my first care has been to restore warmth to the system. When I have found the pulse not to exceed 100 or 108 strokes in a minute, regular in its vibrations, and not very weak, after composing *with an opiate* any inordinate commotion that happened to exist in the stomach or alimentary canal, (which I have seldom thought it expedient to encourage,) I have ordered from half a drachm to a drachm of a mixture of volatile aromatic spirit and paregoric elixir every two or three hours, with a cup of warm wine whey or strong snake-root tea between the doses; and in cases appearing to indicate the necessity of stronger stimuli, I have directed toddy to be used as constant drink. In a day or two, if the pulse did not become stronger and less frequent, the bark was added, with an additional quantity of wine and brandy. The bark, with camphor and the most powerful stimulants, have in many cases been given with good effects from the first attack of the disease. Under the use of these remedies, with the occasional use of anodynes and the judicious administration of nutriment, the patient soon began to mend, and finally recovered. Instead of the volatile spirit and paregoric, a combination of camphor with the volatile sal ammoniac, in pills, was sometimes given with the same beneficial result. In cases of the disease attended with swelling and inflammation of the throat, not evincing a very malignant temper, a strong volatile liniment with fomentations of hot vinegar and spirit, have been serviceable: blistering added to these has seldom failed, when accompanied with corresponding general

remedies, to produce the happiest effects. The same external applications and the same constitutional treatment have been equally successful in cases affecting the breast; provided the breathing of the patient was not convulsive and laborious, a circumstance always imminently dangerous and mostly fatal. Indeed, I cannot say, nor can I learn, that a single cure has been performed, in which that particular state of breathing so characteristic of this form of the complaint has been long established. Opium and the volatile alkali with wine or brandy, plentifully administered, have appeared in such cases to give the only relief.

In addition to the remedies that have been already mentioned, the warm bath and a variety of warm applications, have been frequently and extensively employed; and, in the first of the disease, when it existed in the head with swelling of the face and eyes, and superficial coldness not depending on an imperfect or defective action of the lungs, these remedies have certainly been eminently useful; but in many cases, where the symptoms of chilliness were the effect of a deficiency or absence of the vital heat of the blood, the application of artificial heat availed nothing: as soon as it was removed the coldness returned, and the disease went on in its work of destruction. Of the advantages of bleeding I have had but little experience; though I have reason to believe that, in the hands of some, this remedy has been mischievous. Whenever it has done good, it has been plainly indicated; in doubtful or difficult cases no one has ventured to say any thing in its favour. Purging, I believe, has been equally inefficacious; and the whole catalogue of diaphoretics and expectorants have been exhausted in vain. An easy expectoration and a natural diaphoresis are not to be brought about in this disease by such feeble auxiliaries, and whoever suffers himself to confide in them will have to lament his folly. They must be produced by medicines calculated to increase and support the vascular action and excitement of the system. In a state of typhous debility,

the *Peruvian bark*, *wine* and *brandy*, are the best sudorifics and expectorants in the *Materia Medica*.

A multitude of nostrums and prescriptions of domestic origin and reputation, have been used and recommended for the topical inflammation, swelling and pain, which attend the different forms of the complaint. Hops to the throat, yeast poultices, applications of pepper and salt to the neck, are among the most common of them: they all may possibly do service as local applications, but are in no respect preferable to the volatile liniment, mustard and blisters. Hops or yeast may be used internally with benefit, where much is not required; but it must appear evident to every one in the least conversant with the occasional force and malignity of this disease, that they are remedies on which no secure reliance can ever be placed.

The appearances of inflammation, which so constantly show themselves in this fever, are extremely fallacious and illusory; and they have tended, I fear, in no small degree, to puzzle and mislead practitioners. Occurring with any grade of typhous fever, every inflammation must necessarily partake of the character of typhus; for I deem it physically impossible, that any local affection can exist in any case, exhibiting a kind of action different from that under which the system labours. That external inflammations are often cured by stimulants and tonics is undeniable; the fact must be familiar to every reflecting physician: then why not attempt the relief of internal inflammation by the same means, especially when they are so vehemently called for by "*the state of the pulse and the condition of the system.*" It is only by delivering ourselves from the erroneous associations that have been so long kept up in our profession by indolent and empirical practitioners, that we can ever hope to arrive at any degree of certainty or satisfaction in the cure of diseases. The connection that exists between the names of certain diseases and the remedies which have been employed to cure them, become often as fixed and immutable as the names of certain plants or animals are with

the fruits they yield or the qualities they exhibit. But diseases are not like trees, which retain their character and continue to yield a similar produce through an infinite succession of ages. Who can undertake to say that the disease he subdued a week ago with an opiate and a blister, will appear again in the same form, or submit to the same management, at any subsequent period? No one surely would be so ignorant and preposterous. Let us cease then to prescribe for names alone, and learn to accommodate our remedies to the condition of our patients, and to the variable and ever-changing characters of diseases. Reason and experience, uniting together in this great work, shall teach us to surmount the obstacles which lie in our way to the temple of truth; whilst improvements will be constantly making in our science, honourable to human genius, and fraught with blessings to future generations.

J. NORCOM.

February, 1815.

Account of a Case of Spontaneous Extravasation within the Theca Vertebralis, which soon terminated fatally. By THOMAS CHEVALIER, Esq. Surgeon Extraordinary to the Prince Regent, and Surgeon to the Westminster General Dispensary.

[From the London Medico-Chirurgical Transactions for 1812.]

Miss D———, aged 14, for several days felt pain in the head and back, which induced her, on the 26th of February, to apply for medical assistance. Blisters were applied behind the ears, and opening medicines were ordered, which operated the following day, and relieved the pain in the head; but the pain in the back grew much worse, and was aggravated and accompanied with a tendency to sickness, on sitting up. On the 3d of March the pain in the back increased much, and on the following day her mother thought she discovered a little projection of the spinous processes of the lumbar vertebræ, in consequence of which I was desired to see her. I could

not discover any thing in the appearance of the back that was not natural, nor was any particular pain excited by pressure. The effort to sit up distressed her much; but her countenance was clear and healthy. The tongue was rather white: she had a moderate, regular pulse at 120. Under these circumstances the pain did not excite any particular alarm in my mind: I directed some leeches to be applied as nearly as possible to the seat of the pain, and afterwards an opiate lotion: she was also ordered to take three grains of antimonial powder, with a saline draught, every six hours, and I left her in full expectation of finding her relieved on the morrow, especially as, on strict enquiry, she could recollect no exertion or other violence by which the symptoms could have been produced.

On the following morning, to my great surprise, I was informed that, on the evening after I had seen her, she complained of a sudden and violent increase of the pain, and immediately went into convulsions, in which she continued between five and six hours and then expired. On the 6th of March I examined the body in the presence of Mr. Johnston, of Mortimer street, who had attended her from nearly the commencement. There was not the least appearance of disease in the brain or in any of the thoracic or abdominal viscera. The appearance of the spine was also perfectly natural. I therefore proceeded to cut away the bodies of the lumbar vertebræ, in order to expose the cavity of the spinal canal, close to the seat of the pain. I found it filled with extravasated blood, which, from its florid colour, must certainly have been arterial, and which covered the whole of the cauda equina. The cavity appeared to be filled much higher up; but I did not prosecute the dissection, as it did not appear to me of much consequence to ascertain the exact limits of the extravasation, and the violence that must have been committed in opening the cavity farther, would have rendered it difficult, if not impossible, to tell precisely from what vessel the blood had issued. The original seat of the pain would naturally lead me to suppose that the rupture must have taken place

near the commencement of the cauda equina, and it is probable the effusion of blood stopped within that part of the cavity inclosed by the dorsal vertebræ, as there was no appearance of it at the foramen magnum occipitale, when the brain was examined.

The blood, though florid, was not at all of an equal tint, it was very imperfectly coagulated; it is therefore probable that the vessel first gave way at the commencement of the illness, and again to a much greater extent at the time the convulsions came on.

I apprehend cases exactly of this description have not been very commonly seen; but that similar mischief should frequently occur, in consequence of violent strains, is naturally to be expected: and I believe the foundation of carious spine, which is often laid by such accidents, is not unfrequently attended by some such mischief, which, as it may take place in various degrees, would account for the great disproportion one sees in examining a multitude of cases of this sort, between the degree of curvature in the spine, and diminution of power in the lower extremities.

A child of 12 months old, who had just recovered from the operation for hair lip, was carried out by the nurse. On its return home, it seemed in much pain, and appeared to have lost the use of its lower extremities: it died in three days. On opening the body I found the spinal canal full of a bloody serum, which, I have no doubt, was occasioned by slight extravasation from a strain and subsequent inflammatory effusion. And how destructive such extravasation, and inflammation combined, may be to the structure and office of the nerves, was illustrated by the case of a miller, who suddenly lost the use of his lower extremities, by lifting a heavy sack of flour. He died on the 15th day after the accident. On examining the vertebral canal, some extravasated blood was found mixed with a sanious matter, the theca vertebralis was evidently inflamed, and the nerves of the cauda equina more completely rotten, than I have found them after many weeks'

maceration in putrid water, after removal from the dead body.

These cases seem to have a very close resemblance to apoplexy, and point out the propriety of bleeding as early as possible after their occurrence, in order to prevent an increase of extravasation before constitutional debility takes place, and show also the importance of distinguishing betwixt that primary weakness of the lower extremities, which is the direct result of the local injury, and that subsequent weakness, in which indeed they will participate, but which is the effect of the shock the constitution has received, and which probably does not fully predominate till several days after; the intermediate time being occupied by more or less of symptomatic fever, which requires a moderate antiphlogistic plan of treatment.

An account of a New Mode of Treatment in Chronic Rheumatism, and especially in Sciatica. Communicated by ALEXANDER MARCET, M. D. F. R. S. One of the physicians to Guy's Hospital.

[From the London Medico-Chirurgical Transactions for 1812.]

I HAVE frequently had the opportunity of observing, for the last six or seven years, that the profuse and unavailing sweats which often spontaneously take place in the early stages of rheumatism, and exhaust the strength of patients without alleviating their sufferings, are almost in every instance checked, and the pains proportionally relieved, by the use of antimonial medicines. Several distinct instances of this kind were recorded some years ago at Guy's Hospital in our clinical diaries, and the explanation which I ventured to offer of this paradoxical result, was, that the profuse flow of moisture from the pores, is not, in itself, the circumstance which diminishes pain in rheumatic affections; but that the relief is produced by a certain condition of the surface, or peculiar action of the cutaneous vessels, which, though generally productive of

moisture, is not necessarily connected with profuse perspiration. It is this peculiar action which antimonials are so apt to promote; and there is no difficulty in conceiving, how the violent and colliquative paroxysms of sweating which occur in rheumatism, gradually yield to this gentle and uniform operation.*

The following interesting case, which I think in every respect worthy of being communicated to the Society, appears to me to contain ingenious and instructive hints on the treatment of rheumatism, and on various physiological points, and to throw some light upon the preceding observations. It was drawn up by the patient himself,† a gentleman, who, although not belonging to the medical profession, is so well known in the philosophical and literary world, that his name, had I been at liberty to give it at full length, would have added great weight to the opinions and statements which his paper contains.

"About eighteen years ago," says Mr. C. "I received a sprain on horseback which occasioned very violent pain in my loins, and still more in the left hip, thigh, and leg, following the course of the sciatic nerve, and spreading itself over the sole of the left foot. I was then on the continent at Bruxelles; and after severe blistering and other remedies, not finding myself better, I was ordered to try the mud baths and douches of St. Amand. Having used them six weeks to no effect, I proceeded to Paris. I tried various methods of cure under the most eminent surgeons there, as warm and cold bathing, vapour, air conducted through a heated pipe directly to the part affected, warm and strengthening plasters, fumigations, &c. till at length the celebrated and unfortunate Monsr. De Seaux proposed the moxa. This was accordingly applied with

* It is probable also that the invariable tendency of antimonials to determine gently to the intestines, may contribute to this beneficial effect. Opium alone, often checks the most distressing symptoms, but its mode of operation is altogether different.

† R. C. Esq. F. R. S. &c. &c.

more than common severity, and the suppuration was maintained longer than usual, but without effect. In this state I was, with many other English, put into a damp prison, and a violent rheumatic affection fell upon the injured parts. I remained in this situation fifteen months without a possibility of applying any remedy. Upon recovering my liberty, an English physician proposed to me a quack medicine, known in Paris by the name of Goderneau's powders,* adding strong testimonies in its favour, although the French physicians reprobated it as unfit for human creatures. Much more convinced by the English physician than deterred by the French practitioners, I began this powder; and, after six doses of it, the pain diminished, and I was able to walk. Time has since that helped to wear out the complaint, and I have occasionally

* I have since that time had an opportunity of examining these powders chemically. They are a preparation of mercury. Each parcel given as a dose contains twelve grains (French). The colour is not so white as that of calomel. Examined with a lens, small globules of metallic mercury are discernible, and also some reddish particles, which are red precipitate. They are wholly volatile at a low heat like calomel, but volatilization separates them in a manner which proves them not to be homogeneous; for the vial in which they are sublimed is marked with three distinct zones, white, red, and gray. Water does not dissolve any sensible portion of them. Nitric acid dissolves the whole of them, and nitrate of silver, poured into the solution, lets fall a quantity of muriate of silver corresponding to about nine grains of calomel. The remaining three seem composed of one and a half metallic mercury, and one and a half red precipitate. By triturating the above substances in the above quantities, I produced a compound very like Goderneau's powders, but rather more uniform in its appearance. This is a very rude preparation of mercury, and the use of it should not be encouraged. Its effect is to produce a disagreeable sensation in the stomach, and afterwards to increase the appetite. It also purges, and, as I am told, sometimes produces vomiting. The French Faculty exclaim against it, but this they are apt to do against every medicine more active than orange-flower water; and yet they admit corrosive sublimate. The Chevalier Goderneau was a military man, and a knight of St. Louis, but no chemist; and since the revolution has swept him from off the face of the earth, the care of preparing the powders has devolved upon his sister, an old maiden lady, who, from time to time, swallows large doses of them for a sore foot, which has the advantage of always being about to heal.

been five or six years without its returning: sometimes travelling in frosts and snows in the north of Europe, passing two severe winters in the mountains of Germany, and sometimes inhabiting very warm climates. About five years ago, on going from Spain to Paris, at a bad season of the year, without having the precaution of adding to the clothing I had worn in the south, I felt a slight return of the complaint. A dozen baths and douches of artificial sulphureous waters, which are prepared in a particular establishment* in that city, relieved me, and I was wholly free from pain till I came back to England in 1809.

* The establishment of artificial mineral waters at Paris is very extensive and useful. All the known mineral springs in Europe are there prepared according to the best analysis of modern chemistry; and in sufficient quantity for drinking, bathing, or douches. The climate of Paris is colder in winter, and warmer in summer, but it is much less damp than that of London; and during five months of the year a continuance of fine weather is much more to be depended upon. Almost every evening from the beginning of May to the middle of September, all the public walks which abound in and near that city are crowded with persons who, very lightly clad, remain walking or sitting in the open air, till eleven or twelve o'clock at night; a system of life which no inhabitant of England could follow eight days consecutively without suffering for it. Warm bathing is therefore not of such general use or benefit in England as in France. There are few places where nature has done so much in favour of warm bathers as Bath; and art has done almost every thing except taking advantage of those very waters which have caused the prosperity of all the rest. The baths however have been considerably improved of late years, but still there does not exist at Bath so efficient a douche as those of the artificial establishment in Paris. The strongest douche at Bath falls from a perpendicular height of fourteen feet, as I have been informed. The highest douche at Paris falls from thirty-two French feet, a height which is wholly arbitrary as to the medical effect, and is merely founded upon this physical fact; that the weight of a column of water thirty-two feet high, is equal to the pressure of the entire atmosphere upon a basis equal to that of the column of water. But, as the force of falling water increases in the ratio of the square of the perpendicular height of the pipe through which it falls, the douche at Bath has not one-fourth part of the force of that in Paris, and the difference of their effect is very great. A small expense might rectify this deficiency at Bath, and establish douches of any height, from one to fifty feet if necessary; and which, in their application, might be proportioned to the sensibility of the patient

"No changes from heat to cold ever injured me so much as damp; and I had not long been in this country when the pains recommenced. They were not very troublesome at first, and during eighteen months I applied no remedy but increased clothing. In May, 1811, I grew much worse, and in October, the climate of Scotland, where I then was, so much increased my sufferings that I found it absolutely necessary to have recourse to more active methods. By the advice of Doctor Gregory I went through a course of calomel, taking from two to three grains of it with a certain quantity of opium every twenty-four hours, during six weeks; and seconding its efforts with frequent blistering. I have applied as many as three blisters at a time, from my hip to my foot, and renewed them as soon as the skin was sufficiently healed to allow a fresh application. By other medical advice since that period I have tried bathing in warm sea water, in artificial sulphureous waters, the same as those which had afforded me relief in Paris, and in the Bath waters. I have also used the dry pump there, vapour baths, and heated air, friction, cupping, leeches, and electricity. I have taken internally nitric acid, James's powders, guaiacum, nitre, cicuta, hyoscyamus and the eau medicinale; bark, and finally arsenic, but all to no purpose. Were I to state in general terms the effect of all these, I should say that cicuta, hyoscyamus and the eau medicinale procured me temporary relief; and that bathing of whatever kind usually made me worse. In short, I had nearly exhausted the materia medica, and I had no hope left but in a more favourable climate.

"Happening about five weeks ago to hear of a case which bore a strong analogy to my own, though the subject was not a human creature, it suggested to me an experiment which I resolved to try immediately. A celebrated race-horse,* belonging to a nobleman very well known at Newmarket, had been cured of a disorder which had all the symptoms of rheu-

* Vandyk.

matism, by sweating in body clothes, after every other remedy had failed. I therefore clothed myself in a sufficient quantity of flannel, and set out to walk as far and as fast as I could. With the utmost difficulty I proceeded half a mile; and the pain I suffered contributed not a little to the effect of the exercise in promoting perspiration. I returned home in a profuse sweat, rubbed myself dry before a fire, and went to bed. In about an hour I got up, found myself very much fatigued, but in other respects not worse. Forty-eight hours after this, I repeated the same kind of exercise, and found that I could walk a mile with as much ease as I had walked half that distance on the first day. My general sensations were the same as before; but, as the fatigue diminished, I thought I could perceive an amendment in my rheumatic pains. Two days afterwards I took my third walk, proceeding as before, and after it I had a better night, less interrupted by pain than any I had enjoyed for eighteen months. From that moment I looked forward with confidence to a cure, and I have not been disappointed. Every succeeding walk has diminished my sufferings, and I may safely say, that after the sixth, I was as free from pain as I had ever been in my life. The only remnant I have left to remind me I was so lately a cripple, is a weakness in the left leg, particularly about the ankle, together with now and then a slight sensation of numbness along the sciatic nerve. These are natural symptoms, considering that I had been so long without using the limb; and there is every reason to suppose they will yield to time and moderate exercise. I have now walked nine times in this manner for the purpose of sweating, and shall continue to do so probably much longer; for I find it of the greatest use to my general health to counteract the effects of sedentary habits.

“I usually proceed to my sweating walks in the following manner. Next to my skin I wear stockings, drawers, and a shirt, all of fleecy hosiery. Over these I put one, two or three pair of flannel drawers, one, two or three flannel waistcoats; and round my hips and loins I gird six yards of thick flannel,

making, beside the drawers and waistcoats, eight thicknesses of flannel on the chief seat of pain, and the origin of the sciatic nerve. Over all this I wear warm pantaloons and a great coat. When I have walked one or two miles, more or less according to the heat of the day, I am generally in a profuse perspiration. I return home, take off my wet clothes, have a couple of changes of well aired flannel, and then lie down upon a bed not warmed. I use no means to excite further perspiration after the muscular action is over; but, on the contrary, rather incline to check it as speedily as I can, taking particular care however to avoid catching cold.

"I do not perceive that the quantity I perspire has any influence on the efficacy of the remedy. I imagine that a violent action produced in the general system is the chief cause of its salutary effect. In consequence of this opinion, I cease the exercise the moment that a very increased action is well established. This is fully produced with the above quantity of clothing in moderately warm weather, by walking from one to two miles. For patients who are very much disabled, the quantity of clothing might be increased, and the distance diminished. When the excitement is well established, I find my pulse rise to between 90 and 100, and it is full and strong.

"When I began to experience relief from this mode of treatment, I was eager to prosecute the cure, and took my walks every second day. Being now relieved, I resume them only every fourth, fifth, or sixth day, as most convenient.

"I do not find myself under the necessity of any particular precaution as to avoiding cold the day I exercise; and, in this respect, sweating by muscular action has an immense advantage over warm baths, vapour, or heated air; particularly in a climate so damp as that of an island situated in the north seas must be. Physiology will easily point out many other advantages in exciting perspiration by a stimulus which invigorates, rather than by the enervating methods of heated air or water.

"Since beginning this process, I do not find that I am grown thin; and in my general health I am infinitely better. I

feel myself more strong and active, and less sensible of cold. My diet has been much as usual, but my appetite rather increased. I have occasionally taken a little bark to maintain the general tone of the system; and on returning home after each walk, I have found that a few drops of hartshorn in water were refreshing, and prevented thirst during the rest of the day.

“ By what I have learnt from very good authority, the exercise I perform is not one-twentieth part of what the New-market riders undergo. There is hardly an example of one of those who follow the advice of a skilful physician in their process of wasting, that suffers by it; and the opinion that either their health is injured or their life abridged, is altogether erroneous. Excessive purging is never used now, except when the riders are too lazy to undergo violent exercise, for purging is found by experience to be a much more prejudicial mode of reducing their weight. Sweating by muscular action with an increased quantity of clothing might be recommended not only to rheumatic patients as a safe and easy remedy for their pains; but to persons of both sexes who are troubled with redundant corpulency.

“ P. S. Since the above was written, I have had leisure to make some further observations which I beg leave to add.

“ I am still more convinced that a very profuse and long continued perspiration, promoted by muscular action, is not necessary to the cure of rheumatism, or to the improvement of general health, unless corpulency be one of the evils which is to be removed. Perspiration may be useful as a proof that a very strong action is established in the system, and may in some sort be regarded as the measure of that action; in the same manner as the point of ebullition is referred to as a rough thermometer by those who want very warm water. Of the very much which has been attributed to sensible and insensi-

ble perspiration a great deal certainly is true; but may not much also be attributed to the action excited in the system by those very medicines which are supposed to promote perspiration? Does mercury, independently of the diseases it cures or causes, diminish the quantity of flesh by mere perspiration?

“As an encouragement to those who might be deterred from the use of this remedy by the apprehension that it is too severe for a weak constitution, I add the following table of my weight taken twice or thrice each day, during the time that I was performing six of these sweating walks, (one in every forty-eight hours), undertaken with a view to ascertain whether the quantity of exercise necessary to cure a sciatica, in such a case as mine, is so great as to cause a material loss of flesh in the patient.

“Before I began to weigh I had already walked nine times. It is therefore only by my general appearance that I can say I had not lost flesh by my first walks. Previously to the six walks of which I am going to state the results, I had been obliged to suspend my exercise for fifteen days, as the weather had been extremely bad, and I had an accidental attack of diarrhœa during four days. I weighed night and morning, before and after walking, always in the same clothes, and these as few as possible, and took every precaution against error.

	WEIGHT.						
	Morn- ing.		After walking.		Night.		
Nov. 26	st. 13	lb 1	st. 13	lb 1	st. 13	lb 1½	
27	13	1	12	13	13	1	Walked 40 minutes; sweat pro- fuse.
28	13	0			13	2	Out in a carriage most of the day.
29	13	1	12	12½	13	2½	Walked near three miles; sweat very profuse.
30	13	1			13	2½	Out on foot all the morning.
Dec. 1	13	1	12	13	13	2	Walked 30 minutes; sweat mo- derate.
2	13	1			13	3	Out on foot.
3	13	2	13	0	13	3	Walked 30 minutes, with in- creased clothing; sweat pro- fuse.
4	13	1½			13	3½	Out on foot most of the day.
5	13	2	13	0½	13	3	Walked 30 minutes; sweat mo- derate.
6	13	1½			13	3	At home all day.
7	13	2	13	0	13	3½	Walked more than three miles; sweat very profuse.
8	13	2			13	4	Out on foot all the morning.
9	13	2½			13	4	Out on foot.

Experiments on the bark of the Coccoloba Uvifera. By JOHN
BOSTOCK, M. D. of Liverpool.

[From the London Medico-Chirurgical Transactions for 1812.]

ALTHOUGH Kino has been, for a considerable time, well known as an article of the *Materia Medica*, there still remains some uncertainty respecting its origin. It is indeed generally supposed, that there are three substances, somewhat different from each other, to which this name is applied. The one which has been the longest known, and is perhaps the most frequently met with, comes from Africa; but we are entirely ignorant from what plant it is derived. A second species is said to be extracted from the *Eucalyptus resinifera* of New South Wales; while a third variety, which is brought from the West Indies, has by some writers been ascribed to the *coccoloba uvifera*, and by others to the mahogany.* Having obtained a quantity of the bark of the *coccoloba uvifera* from a friend in the West Indies, on whose accuracy I could implicitly depend, I embraced the opportunity of examining its properties, and comparing the extract formed from it with the kino usually employed in medicine.

The bark appeared to have been taken from branches of from one to two inches in diameter, and was partially rolled up, much after the manner of the common Peruvian bark. No part of it was more than one-twentieth of an inch in thickness, and some specimens considerably thinner. It was lined with a fine reddish brown cuticle, while the rest of the bark was of a light yellowish brown colour. The external surface was clean, and nearly free from any protuberances, but in many parts it was marked with slight longitudinal furrows. When cut transversely, the external part of the bark, for about one quarter of its thickness, exhibited a coarser texture than the remainder, and could not be reduced to an equally

* Duncan's Ed. Disp. 292; Thomson's Lond. Disp. 213; Murray's Mat. Med. 2. 304; Nicholson's Journ. 6. 232.

fine powder. It had scarcely any smell; when chewed and kept for some time in the mouth, it produced a moderate degree of bitterness and astringency, with a slight mixture of an aromatic flavour.

A portion of the bark reduced to fine powder, from which a little of the coarser part had been separated, was mixed with forty times its weight of water, and kept for an hour at the heat 200°. A light brown fluid was formed, which was filtered while warm. Although at first it was only slightly opake, it became completely muddy upon cooling, and remained so after being kept at rest for some days, but it was rendered nearly clear by filtration. Fourteen successive infusions were made with the same powder, when it appeared that all the matter was removed which water was capable of dissolving. The second infusion, like the first, was opake, but the thirteen remaining infusions were nearly, or quite transparent. By the application of heat the opake infusions were rendered transparent, but they became opake again as they cooled. The opacity was equally produced whether they were exposed to the atmosphere, or entirely excluded from it. After being kept for some time, all the infusions became mouldy, the quantity of mould being of course greater in the earlier ones. The water was found to have dissolved 42 of the powder; the residue was of a redder colour, and of a more spongy texture than before the experiment. The infusion seemed to retain its transparency until all the water was evaporated; the extract was hard and brittle, and of a very deep reddish brown colour. It was softened by heat, and reduced to a half melted state. From what was observed during the evaporation of the infusion, it seems that water has the power of retaining in solution almost an indefinite quantity of the extract, although, when heated with the bark, it will not originally take up more than one-sixtieth of its weight of soluble matter.

When the coccoloba bark was added to water, and no heat applied, the effect was considerably less; a transparent light brown fluid was produced, after remaining several weeks in

contact; the process of moulding seemed, however, to be more rapid in this, than in the infusion made with heat.

A portion of the powder was digested with sixty times its weight of alcohol: the fluid at first assumed a dull olive colour, and gradually became more brown; the brown colour was increased by applying a gentle heat, but it still retained a considerable tinge of green. The fluid was then separated from the powder, and it gradually acquired a reddish brown colour, without any mixture of olive. The powder, after being subjected to the action of the alcohol, was found to have lost exactly half its weight; the residue was not very different in its appearance from the entire powder, except that it was rather more dry and fibrous.

The warm infusion, after being filtered, and while it was still recent, was subjected to the action of different re-agents, and by way of comparison, similar experiments were performed on an infusion of kino. The kino that I employed was the species commonly used in medicine, and which appeared to agree nearly with the description of the variety that is brought from Africa.* By being heated with water the greatest part of it was dissolved, but after the addition of several successive portions of water, a little remained which was no longer capable of being acted on: this undissolved part was dark coloured, hard, and gritty. The infusion became opaque as it cooled, but by filtration it was rendered nearly transparent. Its colour was very different from the infusion of the coccoloba, the latter being brown with a tinge of red, while the kino was red with a slight tinge of brown. The re-agents employed were, 1. jelly prepared from isinglass, 2. muriate of tin, 3. oxy-sulphate of iron, 4. superacetate of lead, 5. tartarized antimony, 6. lime water, 7. sulphuric acid, and 8. subcarbonate of potash; the saline bodies were all in the state of saturated solution. The results were as follow:

* Thomson's Lond. Disp. 213.

COCCOLOBA.

KINO.

1. Copious, light brown, flocculent precipitate.	Precipitate less copious, and of a reddish colour.
2. Copious light brown precipitate.	Precipitate much less copious, and of a light buff colour.
3. Copious black precipitate.	Copious precipitate of a dull olive colour.
4. Copious precipitate, of a grayish colour.	Precipitate less copious.
5. Copious gray precipitate.	No effect produced.
6. Considerable gray precipitate.	Precipitate much less copious.
7. Copious whitish precipitate.	Precipitate much less copious.
8. Brown precipitate in moderate quantity.	No precipitate; the red colour deepened and brightened.

The tincture of the coccoloba bark was not affected by the addition of water. Jelly and the oxysulphate of iron threw down precipitates nearly similar to those from the watery infusion, but the muriate of tin had no effect. A quantity of the tincture was slowly evaporated, and a residuum was obtained which was brittle, and of a browner colour than the extract from the infusion. It appeared to be scarcely soluble in cold water, but in hot water the greatest part was dissolved; the solution became muddy as it cooled, it was rendered transparent by heat, and again grew opaque when the heat was withdrawn. It was then filtered, and an infusion was obtained which was nearly transparent, and of a light brown colour. The tincture of kino being treated in the same manner, a residuum was obtained, which was of a deep red colour, and of a more friable texture than the kino itself. The residuum was, for the most part, readily soluble in hot water, although a small portion of a black substance remained undissolved. This part was soluble in alcohol; and the solution was not precipitated by water. Comparative experiments were then made upon these two infusions, by adding to each of them the same re-agents as in the former instance; the effects were nearly similar to those mentioned above.

A portion of the residuum of the coccoloba, after the action of water upon it, was then digested in forty times its weight of alcohol, and a light olive tincture was produced, which gradually acquired a shade of brown. By this operation the pow-

der lost about one-eighth of its weight. When the converse of this experiment was tried, i. e. when the residuum of the tincture was digested in water, scarcely any effect was produced, the infusion was slightly tinged by the oxysulphate of iron, and a very minute precipitate was produced by jelly.

From the above experiments we may conclude, that the extract of coccoloba is a substance of the same nature with the kino used in medicine; but that it differs from it so far as to show, that they are not derived from the same plant. They are very similar in their external appearance and physical properties; but there is an obvious difference in the colour, both of the infusion and tincture. The effect of the re-agents is also different; jelly producing a brown precipitate with coccoloba, and a reddish one with kino; iron a black precipitate with coccoloba, and an olive-coloured one with kino. The effects of lime and sulphuric acid are much less with kino than with the coccoloba: there is no precipitate thrown down either by antimony or the subcarbonate of potash from kino, while the effect upon the coccoloba is very considerable. The soluble part of the coccoloba bark seems to consist principally of tan, which is in all respects similar to the tan of the gall nut; while the tan of which kino is chiefly composed, resembles that of rhatany, and the substance which is artificially procured by Mr. Hatchett's process. The tan of the coccoloba bark is accompanied, as is usually the case, with gallic acid, and it likewise exhibits those properties which have been ascribed to the presence of a specific vegetable product called extractive; but the existence of this I think has not been distinctly proved.* The substance procured by evaporating the watery infusion, is in part rendered insoluble by the process, and the same would appear to be the case with kino, as it is probable that kino is formed by evaporation, from an infusion or decoction. Its appearance indicates that it has undergone this kind of operation, and I am not acquainted with any in-

* See Nicholson's Journ. 24. 215—222.

stance in which a substance, composed principally of tan, naturally exudes from a plant.

That part of the coccoloba which is soluble in alcohol, and not soluble in water, was examined by evaporating the tincture formed from the aqueous residue of the bark. By the evaporation, a substance was left, the greatest part of which was of a greenish brown colour, and along with it a little reddish matter. Its odour was fragrant, something like that of the balsam of tolu. Water that had been digested upon it produced only a slight effect with isinglass, and the oxysulphate of iron. Neither the tincture of this substance nor of the entire extract of coccoloba were precipitated by water. The substance left, after digesting in water the residue obtained by evaporating the tincture of the recent bark, was very similar, in its colour, odour, and consistence to that procured above: it approaches to the nature of the resinous balsam, but its solution in alcohol is not precipitated by water, although it is not itself soluble in that fluid.

The following may be regarded as an approximation to the analysis of the bark of the coccoloba:

Woody matter	-	-	50
Tan	-	-	41
Balsamic substance	-		9
			<hr/>
			100
			<hr/>

Hints relative to the most eligible method of conducting Meteorological Observations. By JOHN GRISCOM, Fellow of the Literary and Philosophical Society; member of the Medical Faculty of Queen's College, New-Brunswick, (N. J.) Professor of Chemistry in Columbia College, &c. New-York, 4to.

[Read before the Literary and Philosophical Society of New-York, on the 8th of December, 1814.]

AN accurate register of a careful and extensive series of observations on atmospherical phenomena, under the direction of this society, might, it is conceived, very usefully contribute to enlarge our knowledge of the nature of those changes, so important to human welfare, and to throw into the common stock of philosophy, facts conducive to its advancement.

Vicissitudes of weather are regarded, by the greater part of mankind, as events altogether fortuitous in their nature, and subject to influences, the precise order of which cannot be ascertained.

Philosophers cannot, indeed, boast of much progress in this field of discovery. Governed, as those changes doubtless are, by chemical, rather than by mechanical laws, it is not to be expected that mankind will ever arrive at that perfection of knowledge, with respect to these phenomena, which has crowned their labours in relation to the heavenly bodies. But, although an acquaintance with the ultimate principles upon which atmospheric changes depend may never be attained, it is scarcely to be doubted, that a diligent course of observation and experiment, performed by men of science, in various parts of the globe, would furnish results which might serve as a foundation for a theory much more perfect than any which has been proposed.

Facts of such common occurrence, and so fully within the reach of observation, as are those of wind, rain, storms, changes of temperature, &c. are, doubtless, susceptible of arrangement and classification, as well as those in other de-

partments of natural science. It is well known that people whose peculiar situations and employments habitually stimulate them to these observations, acquire an unusual degree of skill in the prognosis of weather.

It is thus that shepherds and sea-faring men become deeply versed in the varying physiognomy of the sky. But the knowledge thus incidentally acquired, and insulated from public convenience, were it reduced to something like method and system, might be attained and communicated with the same facility and rapidity as other portions of physical science.

The invention and use of instruments, especially of the thermometer and barometer, have enabled the moderns to arrive at much greater precision than the ancients in their acquaintance with the nature of the atmosphere, and of its agency in the operations of the globe. But the application of those instruments has hitherto been too much limited to a few whom curiosity has occasionally prompted to employ them. In the operation of causes which are co-extensive with whole climates, and wide-spread regions of the earth, it is not to be expected that a few detached observations can be sufficient to establish general laws.

We live in a period, however, in which the spirit of philosophy seems more than ever awake to the interests of humanity; and deriving, as we do, so many important advantages from the sagacity and industry of our progenitors, it becomes our reasonable duty to extend the same benefits, as far as we are able, in a progressive ratio to our successors.

Grounded upon views of this nature, an opinion of the importance of accurate and numerous meteorological observations appears recently to have prevailed in many places, especially in Great Britain.

We are not aware of there being any complete regular series of observations kept in this country. We know, at least, of no journal in which such a series is registered. It appears to us* very desirable that this deficiency should be

* This paper was read as the report of a committee appointed to consider of the subject to which it relates.

supplied: and we should willingly hope that an example, fairly held up by this society, would be followed by similar associations in other parts of the United States.

We proceed to an enumeration of those particulars which we consider as the principal desiderata in observations of this nature.

1st. Changes of temperature.

In the choice of a thermometer, as the standard of temperature, great care should be taken that the instrument be well made. The diversity so frequently observable in thermometers under the same exposure, arises principally from the want of a complete expulsion of air from the tube, and from imperfect graduation. For the estimation of sudden changes of temperature, thermometers with cylindrical reservoirs are preferable to those which are globular.

The mean heat of the atmosphere is so easily affected by irregular currents of air through halls, entries, and other situations within the walls of a building, that it is deemed absolutely necessary, in order to arrive at the standard temperature, that the instrument be exposed to the open air, sheltered only from the sun and rain. A situation which we consider the most favourable, would be a post, placed at some distance from any building which might reflect heat, and surrounded, in the warm season, to the distance of ten or twelve feet by verdure. A sloping roof should encompass the post to protect the instrument from direct rays, but not so as to prevent a free and uninterrupted circulation of air. Beside an instrument of the ordinary construction, thus situated for determining the mean temperature of the air, as deduced from three stated observations in every twenty-four hours, viz. at 8 o'clock, A. M., 1 P. M., and 6 P. M., we would recommend that the society procure, if possible, a good Six's, or self-registering thermometer, by which the greatest heat of the day, and the greatest cold of the night, can be determined by bare inspection, several hours afterwards. The highest intensity of solar heat, as indicated by the thermometer, is obtained when

the instrument is protected by a box of glass from aerial agitations, and exposed to the direct influence of the sun beams. The posterior side of the box may be of wood, and its internal surface should be painted black, or lined with black cloth. The highest elevations of an instrument thus adjusted, during our hottest weather, would, if carefully registered, form an interesting addition to the observations usually noted.

2d. Changes of atmospheric pressure.

We have only to recommend that the barometer employed for this purpose be a good one; that it be furnished with a nonius for reading off the elevations to hundredths of an inch; that the figure of the mercurial surface be noted, with the elevations, whether concave, convex, or horizontal; and that, in addition to the regular observations, the height of the quicksilver in this instrument be attended to as far as the observer can conveniently do it, in all remarkable states of weather, more especially with respect to winds and storms.

The height of the place of observation, in feet, above the level of the sea, should be carefully ascertained.

We deem it of some importance to remark, that of the several methods practised of registering the daily heights of the thermometer and barometer, that which may be called the graphic method, which consists in drawing a line in conformity to the elevations and depressions of the mercury across a sheet, divided by lines which correspond with the scale of the instrument, appears to be preferable to any other. It might be best, however, at least once a day, to note, in numbers, the precise elevation.

3d. The amount of condensed vapour.

The instrument principally to be relied upon, for this purpose, is the pluviometer, or rain gauge.

We deem it unnecessary to point out what we conceive to be the best method of constructing this instrument. The committee which shall be chosen to execute the orders of the

society in relation to the subjects of this report, will, necessarily, avail themselves, in directing its construction, of such hints given by the best writers on philosophy, as they may think worthy of attention. The instrument should be placed as near the surface of the earth as circumstances will admit; as it is well ascertained that, in such a situation, more rain will be caught than in a position considerably elevated above it. As an accurate employment of the rain gauge is particularly desirable, the careful attention of the observer will be requisite, during the fall of snow, to collect exactly that portion which falls within the exposed circumference of the instrument, and to melt it without any loss by evaporation.

4th. Changes in the direction and force of the wind.

In order to ascertain the quarter from whence the wind blows, any of the city vanes which are known to turn easily, and which are within the reach of the observer's eye, may, perhaps, be sufficient. It would, however, in our opinion, be desirable that an instrument combining the properties of an anemoscope with those of an anemometer, which determines the relative force and velocity of the wind, should be provided as soon as the funds of the society will justify a little expenditure for this purpose. Various instruments have been contrived for measuring the force of wind; but we believe the one invented by the celebrated Kirwan is by far the most complete. It is described in the transactions of the Irish Academy, and in the 34th volume of Tilloch's Philosophical Magazine. By this the strength of the wind, from a gentle breeze to the most violent hurricane, may be exactly measured.

The subjects now enumerated, are considered *essential* in every course of meteorological observations, which has the ordinary aim either of curiosity or information. But to render such a series complete; to make a collection of facts that may be held up as an example, and serve as the basis of useful induction to those who shall come after us, there are various other phenomena which, we think, ought not, on an occasion

of this nature, to be neglected. The committee hope not to trespass beyond the proper limits of their duty in attempting a brief detail of those which they consider the most important.

The relative quantity of moisture contained in the atmosphere at any given period, is an object, the knowledge of which is desirable not only for the purpose of comparison, but in an especial manner as the means of improving the theory of evaporation and condensation. Hygrometers of different kinds, and depending on different principles, have been employed for this purpose. That contrived by lieutenant Kater we have ascertained to be very sensible in its operation. Professor Leslie, of Edinburgh, has invented several instruments for this purpose, which have simplicity and facility of management to recommend them. They are particularly described in his late work on the "Relations of Air to Heat and Moisture." It is well known that in warm weather a common drinking glass is a good hygrometer; for when the internal surface is refrigerated by pouring in a cold fluid, the moisture which condenses externally, affords an indication of the quantity existing in the atmosphere, which, when excessive, is considered by many as presaging a change of weather. Such indications, when remarkable, are worthy of being registered by the daily observer; and we would recommend that the person appointed to keep the meteoric register should be instructed to note the state of the hygrometer.

Before a correct, or, at least, a complete, theory of the weather can be arrived at, it will, in all probability, be requisite that greater advances be made in our knowledge of the *electrical* changes that take place in the atmosphere during the transitions from heat to cold, from foul to fair, and the contrary. To ascertain this point effectually is no easy task. It will require great patience and assiduity of attention. But though an extensive course of electrical observations, persevered in for a long time, might prove too laborious, it would still be desirable to note the observance of those changes which

occur in all the most remarkable revolutions of the elements. This could be done by means of an insulated spire, or an electrical kite, or, with still greater facility and cheapness, though less effectually, by the atmospherical electrometer of Saussure, or the more simple instrument of Cavallo. We have observed remarks of this nature in some of the meteorological journals of Europe, and cannot but consider them as adding value to the series of journalized events.

However fleeting and changeable the forms and arrangements of the clouds may appear to an ordinary observer, it is, we know, upon such forms and arrangements that the judgment is most correctly founded, with respect to the probability of an alteration of weather. But the skill of the weather-wise, for want of a more precise, technical language, remains almost altogether empirical. An attempt to remedy this defect, was made some years ago by Luke Howard, by the invention of a nomenclature applicable to the various forms of suspended water; or, in other words, to the modifications of clouds. "By modification is to be understood, simply, the structure or manner of aggregation, not the precise form or magnitude; which, indeed, varies every moment in most clouds. The principal modifications," he observes, "are commonly as distinguishable from each other as a tree from a hill, or a hill from a lake; although clouds of the same modification, considered with respect to each other, have often only the common resemblances which exist among trees, hills, or lakes taken generally."

"There are," he finds, "but three simple and distinct modifications, which he thus names and defines:

"1st. *Cirrus*. A cloud resembling a lock of hair, or a feather. Parallel, flexuous, or diverging fibres, unlimited in the direction of their increase.

"2d. *The Cumulus*. A cloud which increases from above, in dense, convex, or conical heaps.

"3d. *The Stratus*. An extended, continuous, level sheet of cloud, increasing from beneath.

"There are two modifications which appear to be of an intermediate nature; these are

"The Cirro-Cumulus. A connected system of small roundish clouds, placed in close order, or contact.

"The Cirro-Stratus. A horizontal, or slightly inclined, sheet, attenuated at its circumference, concave downward, or undulated. Groups or patches having these characters.

"Lastly, there are two modifications which exhibit a compound structure, viz.

"The Cumulo-Stratus. A cloud in which the structure of the cumulus is mixed with that of the cirro-stratus, or cirro-cumulus. The cumulus flattened at top, and overhanging its base; and

"The Nimbus. A dense cloud, spreading out into a crown of cirrus, and passing beneath into a shower."

These modifications are defined with such further precision and minuteness as to enable a person, of common intelligence, by the aid of a little observation, to understand and to apply the terms. And to render the daily insertion of these characteristic traits of weather more easy, each modification may be represented by a short mark, or character, which may be arranged in a column under the head of clouds. Considering the facility with which such a list may be kept, the committee would recommend its adoption. They observe, that among the numerous diaries of the weather which are published in the foreign journals, that which is kept by the author of the essay on the clouds appears to be one of the most instructive.

In mountainous countries, the figure, position, and motion of the clouds, afford, to the experienced observer, the means of prognosticating, with very considerable accuracy, the approaching state of weather, although their appearances are very deceptive to persons accustomed to view them only as suspended over a widely extended horizon. A course of judicious observations on the atmosphere in a number of such situations would, doubtless, make a valuable addition to the present stock of meteorological facts.

There are but few opinions, in relation to the subject before us, more general, than that which ascribes to the moon a determinate influence over the atmosphere. It is of material consequence, we conceive, that this opinion should be brought to the test of ample experience by regular and widely extended observation. The most careful set of observations, relative to this part of the science of meteorology, which appears on record, is that of M. Toaldo. The inferences which he draws from a cautious comparison of the weather with the corresponding positions of the moon, during the long period of one thousand one hundred lunations, are to the following amount:

There are ten situations of the moon in each lunation important to meteorology, viz. the four quarters, the perigee, the apogee, the two passages of the equator, (ascending and descending equinoxes,) and the two lunistics, as they are termed by La Lande, viz. the north, when the moon approaches the zenith, and the south, when it is most depressed. Then, the probability of a change of weather, compared with the probability of no change, is as follows:

At New moon,	6	to	1
Full moon,	5		1
First quarter,	2	1-2	1
Third quarter,	2	1-2	1
Perigee,	7		1
Apogee,	4		1
Ascending equinox,	3	3-4	1
Descending do.	2	3-4	1
Southern lunistic,	3		1
Northern do.	2	3-4	1

When several of these points correspond, the probability of change is much increased. Thus, if the new moon happen at the turn of the perigee, the chance is as

	33	to	1
do. with apogee,	7		1
Full moon with perigee,	10		1
do. with apogee,	8		1

Although there are several considerations, unnecessary to be now introduced, which lessen the dependence that might otherwise be placed on these results, yet every meteorological register, we think, should contain a column exhibiting the aspects of the moon, with the period; at least, of the apogee and perigee.

A collation of numerous diaries of this sort may, at some future day, either confirm, or totally invalidate, the opinion entertained by some philosophers, that terrestrial as well as celestial events have regular periods of return; and that there are cycles of weather corresponding with some of the lunar cycles.

The period of the apogee comprehends between eight and nine years; and, according to Toaldo, there is a return of nearly the same seasons in those periods successively. Others place greater confidence in the lunar cycle of nineteen years. The ancients, according to Pliny, ascribed to certain periods, a similarity of weather and seasons. But unless it can be shown that the corresponding portions of those periods take place at the same time of year nearly, which is clearly not the case with the period of the apses, they cannot be intitled to much credit. But it may, nevertheless, be not improbable that a cycle of greater duration may be eventually found, in the return of which there will be a complete recurrence of all those states and conditions with respect to planetary and elemental revolutions, that shall conspire to produce the same phenomena.

There is another species of meteorology, very frequently attended to by those who reside in the country, and which is considered by some as susceptible of much precision, and rarely defective in its results. It is that which regards changes announced by prognostics drawn from animals, plants, and every thing which indicates changes of atmosphere.* A good journalist should not hesitate to insert any remarkable

* Vide Rozier's Cours Complet d'Agriculture, Art. Pressage.

presage of this nature. The domestic fowl, the swallow, the hog, the horse, and other animals, may thus contribute to the extension of useful science. Plants which fold their petals and leaves in the night, and usually open in the day, are delicately affected by incipient changes in the air. The *calendula pluvialis* derives its name from this property, which is said to be very decisive.

An unusual transparency of atmosphere, in which distant objects become visible by refraction, and which favours the propagation of sound in an uncommon degree; the perpendicular ascent of smoke, and a more than usual stillness and serenity of nature, are likewise to be taken into the account.

But, among the various objects which claim the attention of the meteorological observer, he must, by no means, omit those from which his science, in its strict and literal acceptation, derives its name. The phenomena of meteors constitute an interesting part of natural history. Hence every remarkable appearance of fire balls, shooting stars, *ignes fatui*, together with the *aurora borealis*, zodiacal light, halos, *parhelia*, *para selena*, lunar rainbows, and other analogous occurrences, ought to be diligently observed, and carefully noted.

Finally, we recommend, as a very useful addition to the series of facts brought into view, that the period of the first appearance of early flowers, in open and exposed situations, in the spring of every year, designated by their botanical names, be noted, with as much precision as the circumstances of the observer will admit. It would likewise be proper to remark the first or earliest visits of the swallow, martin, and other birds, and likewise those of some of the aquatic tribes, as the mackerel, shad, &c.

Information of this kind would probably afford, to persons at a distance, more correct data, from which they might draw conclusions with respect to the nature of our climate, than the best register of the weather, and of the instruments which denote its temperature and its changes.

Extract of a letter dated Cincinnati, November 9, 1814, from Dr. N. Crookshank to Dr. Peter Wilson, Columbia College.

“ On the 4th of June last, about meridian, a dark cloud appeared in or near the southwest point of the horizon, having the usual appearances of electricity, as was known, by the hemispherical or convex appearances of various parts on the superior sides of the different shelves composing it; while the lower part appeared parallel to the earth. Some light clouds were seen to move with great rapidity from the northeast, and appeared to meet the former; when both seemed to rise perpendicularly several degrees, so as to attain an extraordinary height. I then predicted hail, which presently fell, of uncommon size. Several were picked up after the shower, which ended in rain, too large to put into a cup four inches in diameter. Others were picked up in the time of the fall, thirteen, fourteen, and even fifteen, inches in circumference: yet, strange to tell, no material damage was done, though the width of the shower was five miles, and twenty or thirty in length; the tract of the largest hail, in centre of the former, about a mile. It appeared to consist of several clouds detached from each other, and moving in echelon, so as to appear as if the hail had fallen in stripes. Providentially there was but little wind, and the number of hail stones comparatively few. The larger pieces appeared to be aggregated of numerous others, which were likewise composed of smaller ones. Some, however, of more than ordinary size, appeared single, as if they had been snow balls immersed in water, and refrozen. The largest of these I saw resembled the section of a large hen's egg. About 5 P. M. the same afternoon, a hot or very warm current of air passed over, of such temperature and composition, as to threaten those who breathed it with instant death. Their only remedy was by stooping down near the earth. It actually did prove fatal to the leaves, and parts of leaves of many vegetables, by which means its traces were discovered above sixty miles, along and near the Ohio river.

Near Cincinnati it whitened the points of the green blades of a whole field of oats. Its causes are a proper subject of investigation for your society; and I cannot help thinking, that whoever discovers them, must become a literary creditor to those who have derived the sirocco wind from the sandy deserts of Arabia.

“N. B. The current of hot air happened entirely out of the tract of the hail, to the southward and eastward of it.”

A Case of Fungus Hematodes. By GEORGE LANGSTAFF, Esq. Surgeon, New Basinghall Street. Communicated by William Lawrence, Esq.

[From the London Medico-Chirurgical Transactions for 1812.]

JOHN WHITEHORN, a boot-maker, about 30 years of age, of middle stature, rather corpulent, and of that sallow complexion peculiar to a female whose constitution has been much impaired by long obstruction of the catamenia, applied to me on the 24th of October, 1811, respecting a small tumour on his left shoulder, situated just below the spine of the scapula.

It was about the size of a cherry, and had a blueish red appearance.

In the situation of the swelling, there had been, from the time of birth, a large mole, which, eighteen months ago, had gradually fretted into a sore. From the latter a painful and occasionally bleeding fungus sprung up. Previously to this time, his general health had been exceedingly good.

Two other tumours, each about the size of a small nutmeg, had formed in the left axilla about a fortnight before I saw him. They were free from pain; and the skin covering them had its natural appearance.

I cut away the tumour from the shoulder on the 26th of October. The operation was attended with considerable bleeding from numerous small vessels. The removed part consisted of a firm purple vascular mass, originating from the cutis.

A disposition to the formation of fungus retarded the healing of the wound for five weeks; and the cicatrix had not a natural appearance.

The swellings in the axilla gradually increased, and united into one mass, which grew constantly larger, in spite of the employment of various local means, such as leeches, cold washes, and different stimulating applications. The health became affected, and the functions of the bowels particularly disturbed: small doses of mercury, purgatives, and tonics were employed; and a low diet enjoined.

By December the swelling had increased so much as to occupy the whole axilla, from the pectoralis major to the latissimus dorsi; and it seemed to extend outwards, between those muscles, so as not to press on the axillary nerves and vessels. Its circumference and base were as hard as a cancerous breast: the body of the tumour was elastic, and seemed divided into sacculi containing fluid: the surface was irregular, and the prominences gave a feeling as of fluid contained in cysts. The skin was much stretched and discoloured: it had a purpleish hue, not unlike that of erysipelas; but its temperature was natural. There was no pain until the end of November, when a violent attack took place, with considerable fever: these subsided, leaving the patient occasionally subject to darting pain in the swelling.

One of the prominences at the upper part of the tumor enlarged considerably, and the integuments became thin. It evidently contained fluid, and was very painful when touched; but there had been neither throbbing nor heat in the part. It continued in this way for some time, causing great suffering and disturbance in the constitution. I determined to make a small puncture, to give the patient a chance of relief, and gain some knowledge of the nature of the tumour.

Four ounces of dark coloured blood flowed from the opening; and the discharge was followed by immediate relief.

I closed the aperture, which was much smaller than that usually made in phlebotomy, with adhesive plaster; but a con-

siderable quantity of sanies and ichor flowed through it for nearly a fortnight, greatly debilitating the patient.

The tumour increased but little after this period, nor was pain complained of till the 12th of January, when excruciating and darting sensations were felt in the swelling, on the side of the neck, and along the under part of the arm. These were sometimes so severe, that the patient supposed he should not survive them. The circumference of the tumour now became considerably enlarged, the prominent parts continued elastic, and the integuments were of a deep purpleish red colour. The continued pain and constitutional derangement, accompanied with difficulty of breathing, confined him to bed from the 19th of January, and were not alleviated by any local or general treatment.

On the 8th of February, the tumour measured six inches and a half in the long axis, and six in the short; the central point began to project into a nipple-like eminence, which was apparently only covered with cuticle. It was surrounded by a beautiful deep red and purple coloured disk, the diameter of which was two inches and a half; the skin from this part to the extent of the swelling, was gradually shaded with purple and red streaks. It bore considerable resemblance on the whole to a large inflamed female breast. To the violent pain already described, darting sensations were added, passing from the axilla through the chest, and accompanied with dyspnœa. During the paroxysms of pain, the pulse was from 100 to 120 in a minute; and on its abating sometimes as low as 69.

On the 20th the integuments of the nipple-like projection assumed a dirtiest white appearance, at the most prominent point, and an ichorous discharge exuded.

The cuticle separated on the 22d, and exposed an opening about large enough to admit the end of a probe, through which a considerable quantity of blood and ichor oozed. Instead of a fungous growth, there was only a granular state of the surrounding cutis. The tumour still increased, and measured on the 25th nine inches by seven.

Feb. 27.—The discharge was still copious and perfectly inodorous; which indeed had been the case from its commencement. The integuments, at the centre of the tumour, were of a brownish red appearance, and so very thin to a considerable extent, that I was inclined to think they would give way.

Feb. 29.—The discharge was not lessened, the edges of the ulcerated part were beginning to cicatrize, but the aperture showed no disposition to heal. I introduced through it the whole length of a common sized probe; it took an oblique direction towards the axilla. The discharge was not increased when the probe was withdrawn; although it might have been supposed, from the fluctuation, that a large quantity of fluid was contained in the centre of the tumour.

Another round, hard and painful tumour, about the size of a pea, was discovered on the shoulder, half an inch from the one last mentioned.

March 1.—The swelling still increased in the horizontal direction, though there had been a considerable discharge of blood with serum; the integuments were of a brownish red colour, and felt extremely thin. A fourth tumour, similar to those on the shoulder, presented itself about an inch above the upper absorbent inguinal glands. His health now declined rapidly, he was much emaciated, and complained of constant and violent pains in his loins and chest, and his respiration was hurried on the following day.

March 2.—The discharge from the small aperture had greatly diminished; the tumour was much increased, all the patient's sufferings aggravated.

March 6.—From the last date to the present, the lateral increase of the swelling had been astonishing, as its transverse measurement was now fourteen inches. The skin, about two inches above the part which burst and afterwards was cicatrized (except the small aperture through which the fluid had oozed more than a fortnight,) was extremely thin, prominent, and likely soon to give way.

The circle, where the integuments first ulcerated, was con-

siderably enlarged, owing to its distention by fluid, the aperture having been for some days closed; the new formed skin was changed into a white and fibrous substance, which adhered with great firmness. The pain in the tumour was at this time so particularly violent, from the integuments being so much distended, that I felt inclined to make a small puncture to afford him temporary relief; but on the evening of this day, the integuments gave way, and a considerable quantity of bloody serum was discharged, which occasioned immediate ease; but fluid still seemed contained in the several parts of the tumour.

March 10.—The difficulty of breathing increased, and he had coughed up blood. The integuments at the most convex part of the tumour were beginning to ulcerate, and there were several apertures, through which a probe might be passed into it. The discharge was still considerable, though it did not tend to the diminution of the swelling.

The pain, difficulty of breathing, and other symptoms grew more and more distressing, and diarrhœa came on, with excruciating pain in the bowels. The tumour assumed an appearance of sphacelation at one part, and the discharge became very offensive.

Although the powers of the constitution were reduced to the lowest ebb, a disposition to form these tumours still remained, as one made its appearance on the right side of the neck, and another on the back, and the former became considerably enlarged. Violent sickness, accompanied with tormina and tenesmus, and other dysenteric symptoms, continued till the 16th of March, when death took place.

After insulating the integuments from the base of the tumour, and dissecting back those covering the chest and posterior part of the arm, the superficies of the diseased mass was found to be formed of a congeries of various-sized dark purple-coloured tumours, which had extended between the *pectoralis major* and *minor* muscles, as far as the origins of the

latter, and backwards two inches beneath the *latissimus dorsi*, but had not produced any alteration in their structure.

The axillary absorbent glands were larger than natural; and although the tumour adhered to the capsular ligament, the consequence was only slight thickening of that part.

The vessels and nerves of the axilla were closely imbedded in the upper part of the disease, but except the musculo-cutaneous, or perforans Casserii, which was completely impacted, and lost in the tumour, they were not compressed to such a degree as to impede their functions, or produce any morbid appearance.

The morbid growth weighed four pounds avoirdupois weight, and when the integuments and cellular substance, covering the various-sized tumours which formed the whole, were removed, and the axillary nerves and blood vessels cleaned, it bore much resemblance to an enormous bunch of black Muscadine grapes.

All the tumours situated on the external part of the large one, had that spongy elastic feel peculiar to it, which so singularly characterizes this horrid disease, and which has been described by those who have written on fungus hæmatodes, but particularly by Mr. Burns, Mr. Hey, and Mr. Wardrop.

Several of the tumours were cut through, to examine their internal structure and contents; some were found to be composed of a soft medullary substance, like brain mixed with coagulated blood; others with a dark gray-coloured substance in consistence similar to the former; a few were of a blackish colour, but had the same arrangement of structure as the former, and the fluid expressed from them was exactly like the pigmentum nigrum on the choroid membrane of the eye, or the inky fluid in the bronchial glands, and when their contents were pressed out, the condensed cellular cysts only remained, with a loose fibrous reticulated arrangement of their internal parts, with the ramifications of several minute blood vessels.

The main bulk of the disease was next divided; it presented an irregular union or blended appearance, similar to what

composed the other tumours, and the contents were confined by strata of apparently fibrous reticulated condensed cellular substance; but there were three cavities, each of which contained about an ounce of loose coagulated blood.

The sloughing process on the anterior part of the tumour had not penetrated beyond the integuments, but had changed that part of it beneath them into a white sloughy looking substance.

The blood vessels were numerous, but very small.

There was a tumour in the sternum, under the periosteum, about the size of a walnut, of a brownish red colour, and a pulpy structure. It had caused the absorbents to remove the bone, to allow of its projecting inwards and outwards, and was only held by the ligamentous membrane which covers both sides of that bone; the sternum was softened, and its cancelli filled with the same kind of matter through one half of it; several of the ribs on both sides had similar tumours in them, not far from their cartilages, and under the periosteum. The liver was of a paleish red colour, rather soft in texture, and bestudded throughout its substance with various sized tumours, contained by capsules; some of them consisting of medullary matter mixed with blood, others possessing exactly the same consistence, but of a cineritious colour, and intersected with cellular septa.

There was a small tumour similar to those in the liver, between the layers of peritoneum which form the ligamentum suspensorium hepatis; and two on the front of the pancreas, one about the magnitude of a pidgeon's egg, the other the size of an hazel nut, but connected only by cellular substance to that viscus, which was perfectly healthy.

The stomach, duodenum, and jejunum, presented a healthy appearance, but the mucous coat of the ilium was considerably thickened, and seemed covered with a layer of coagulable lymph of a greenish colour: and I was led to suppose this idea correct, as the valvulae conniventes were firmly agglutinated, and their extremities thickly coated with the same substance.

The cæcum with its appendage and a great part of the colon, exhibited the same diseased appearance, only in a greater degree, and in some parts of those intestines there was an increased state of vascularity.

The iliac and lumbar absorbent glands were enlarged, but did not partake of the primary disease, as in the cases of medullary sarcoma, related by Mr. Abernethy.

The pericardium and heart were healthy; the lungs were studded in their substance with small tumours, similar to those in the liver, and there were many immediately beneath the pleura pulmonalis; and one of the lobes on the left side was loaded with blood and mucus.

On reflecting the integuments of the cranium, another tumour was perceived on its vertex, beneath the pericranium, which had never been noticed during the patient's life; it had affected the bone only in a slight degree.

On removing the skull-cap, a similar tumour was found on the dura mater, under the occipital bone; it had caused absorption of the surface of the bone, so as to expose the diploe. No deviation from the natural appearances was noticed in the brain, except that the ventricles continued rather more fluid than usual.

The testicles were perfectly healthy.

History of a Case of Remitting Ophthalmia, and its successful Treatment by Opium. By JAMES CURRY, M. D. F. A. S. &c. and senior physician to Guy's hospital.

[From the London Medico-Chirurgical Transactions for 1812.]

In the earlier period of life, my eyes were remarkably strong; and the power of vision very complete, both as to distant and to minute objects. The first injury they sustained, was during my stay at Edinburgh, and that owing to the practice of reading to very late hours in the night, without using the protection of a shade to keep off the direct light of

the candles, or a screen to intercept the constant glare of a blazing coal-fire. Still, the only effect of this, was simply fatigue of the eyes; from which they would probably have recovered entirely, by mere rest. But having imprudently exposed myself upon one occasion, by getting out of bed, and standing for some minutes subjected to the night air at an open window, in consequence of a quarrel in the street, I was attacked, in a day or two after, with acute ophthalmia in the left eye; which, however, was in a great measure removed, in about a week, by the application of leeches, and the use of saline purgatives. A slight degree of obscure vision remained from turgescence of the vessels in the fore part of the cornea; but this gradually lessened, so as, in a year after, to be scarcely perceptible to myself, and not at all to the examination of another. A subsequent residence of eight months in Bengal, during which I suffered no less than five attacks of severe illness, in the different endemic forms of intermitting and remitting fevers, &c. not only radically impaired my general constitution, but laid the foundation of that particular weakened state of eyes, which I have ever since laboured under; every *general* febrile attack at that time, being followed by a recurrence of ophthalmia: and even a slight relapse of intermittent, which I sustained during the short prevalence of a westerly wind immediately after doubling the Cape of Good Hope on the voyage home, was attended by the same sequela.* From the period of my return in September, 1787, my eyes gradually gained strength; and would probably have continued to do so, had it not been for an unlucky accident. During the very severe weather in January, 1789, at which time the Thames was so completely frozen as to have booths erected upon it, a heavy fall of snow was immediately succeeded by a rapid thaw; and the pipes belonging to the house in which I resided, being all choaked with ice, the snow water

* The chief mate of the ship had also a relapse of ague, but in both it was slight, and stopped after the second paroxysm by a remedy much used by the natives of India, for the cure of recent intermitting fevers.

in the leaden gutters of the roof rose so high as to get under the tiles, and made its way down through two floors, so as to come into the bed where I lay. How long I was exposed to its influence in the slow mode in which it descended, is impossible exactly to say; but when I awoke through the cold, I found the left side of my night cap, and my left shoulder and arm, with the bed clothes covering them, quite wet. After putting on a dry shirt, shifting the bed clothes, turning the feather bed, and drawing the bedstead into another part of the room, I went to sleep again; and hoped that no inconvenience would ensue, as I had more than once been similarly wetted in my cot by sea-water, without any bad consequence. In a few days, however, I was attacked with ophthalmia in my left eye, which proved more severe and obstinate than any preceding attack; confining me three weeks to the house, and nearly a week of that time to bed: even when the continued pain was abated by leeches to the cheek and temple, followed by a blister, and aided by purging, the vessels of the eye continued distended with blood; and violent pains, affecting not only the fore part of the eye, but extending all round the orbit, came on every night. Under these distressing symptoms, I consulted the late Mr. Hunter, who recommended the use of the cinchona rubra infused in lime water, which was attended by such speedy relief, that the very first night after I began its use, I was quite free from my usual paroxysm of pain, and the eye, instead of being dry and burning hot as before, now discharged tears most copiously, which felt as cold as water from a spring. By continuing this remedy for several weeks, I was enabled to go into the country and settle in business; but I was for many months distressed with inflammation of the glandulæ Meibomii, the acrid secretion from which kept the tunica adnata in a constant state of irritation, and no doubt served to fix, still more obstinately, a distinct speck which had formed exactly in the middle of the cornea, so as greatly to obscure the vision with that eye for many years after.

From the period of this attack in 1789, I continued tolerably free from ophthalmia until the summer of 1794, when I was visited by it in a still more formidable shape, about a fortnight after recovering from a smart fit of regular gout; for the pain now was not confined to the fore part of the eye, but extended into the interior, and at times darted through to the back part of the head, with such violence as to resemble what I conceive would be the effect of a pistol shot. The retina became so exquisitely sensible, that I could not bear the smallest ray of light; and I could discern every article of furniture in a room so completely darkened, that other persons were obliged to grope their way, in order to avoid the table and chairs. Being then resident in a country town (Kettering) none of the medical men would undertake to open the temporal artery, which I was urgent to have done, as I knew that under such agonizing pain I could not long retain my senses. I therefore despatched a messenger to Dr. Kerr of Northampton, who was luckily met on the road, and very kindly hastened to assist me. His opinion exactly coinciding with my own, he immediately performed the operation, and took away eight ounces of blood before I became faint; but even before half the quantity was drawn, I felt my whole head relieved as from the pressure of a vice, and the darting pains entirely subsided. From that moment, I began gradually to recover, in every respect; but the sight of that eye still remained obscure, from the former opacity of the cornea; and both eyes were at times liable to slight degrees of redness and tenderness from exposure to cold.

In the spring of 1798, I underwent great fatigue and anxiety, in attendance upon a gentleman for whom I had the highest regard; being three days and nights, without taking off my clothes, or lying down in bed more than an hour or two at a time. On the very evening when I was liberated from this exertion by the patient's death, I was seized, in a few hours after getting home, with increased dimness of sight in the left eye, followed by violent pain, which came on, with

augmented severity, in pangs that occurred just at the moment I was dropping to sleep. Having no other mode of relief at hand, I took a grain of opium with some antimonial powder, by which I at last obtained sleep, and the next morning I felt my eye almost free from pain, but with a particular sensation of tenderness upon the cornea whenever I moved the eyelid over it. As the eye was now capable of bearing the light, I examined it attentively by means of a small looking-glass, and distinctly perceived a pit or hollow in the fore part of the cornea about the sixth of an inch in breadth, nearly circular in form, and exactly corresponding with the place where the speck or opacity was formerly situated, but which now no longer appeared: in short it was evident, that the speck had inflamed, and sloughed off during the course of one night: the eye has ever since remained free from any opacity visible to another person; but the *new formed* tunica adnata has not the same fine polish as in the natural and healthy state, and consequently small objects, such as the letters in a book, viewed with that eye, appear hazy and undefined in their edges, unless I look at them through a narrow chink, so as to deflect the rays of light, and make them pass a little to one side of the scabrous part; in which way they are clear and distinct.

This detail may to some appear tedious and uninteresting; but I thought it might be satisfactory to the Society, as it certainly would be to me, to have a complete history of the rise and progress of a complaint, which subsequently displayed itself in so distinct a shape, and with such severity of symptoms as I shall now describe; being perfectly convinced, that nothing will contribute so much to enlarge our knowledge of pathology in general, as that concatenation and sequence of phænomena, which at present are often considered as distinct disorders, though in fact only variations of one genus of derangement in the human system.

On Friday the 23d of Dec. 1802, after going round the hospital, and subsequently visiting some private patients, I

returned home at three o'clock in order to dress myself for dining out; but before four o'clock, I felt so much stiffness in my *right* eye, that fearing the consequence of exposure in coming back at night, as well as drinking any wine under such threatening, I sent an apology, and determined upon staying within doors all the evening. By five o'clock the eye was become very stiff, with some degree of soreness; and so dim, that the candles appeared dull, and surrounded by an extensive halo or haze; and at eight the pain was so considerable, that I could not read. I therefore took at going to bed a grain of opium, three grains of calomel, and two of antimonial powder; afterwards drinking a basin of water gruel to promote perspiration. I passed but an indifferent night, however; and in the morning finding the eye considerably inflamed, I applied six leeches round the lower and outer part of the orbit, and took some colocynth extract, which operated two or three times with slight relief. In addition to these measures, I put some of the vinous tincture of opium (the old *Tinctura Thebaica* of the London Pharmacopœia, ed. 1740) into the eye several times, by means of a large camel's-hair pencil; this occasioned very pungent pain for a few seconds, and was followed by a short abatement of pain, which, however, was more comparative than real, for in a quarter of an hour after, the eye felt no better than before. At night the pain again increased, and I repeated the opium, &c. with relief, taking at the same time some liquor ammoniæ acetatæ to excite diaphoresis. The pain abated in the night, and I got some sleep; but no amendment appeared next morning in the eye, which was now still more red than before. On the third night I blistered the right temple, and repeated the opiate, calomel, and diaphoretic, without gaining any more than a temporary benefit. On the fourth day, I became extremely alarmed by the increasing obscurity of vision, which was now so great that I could not distinguish the bars of the window sash, and could barely count my fingers when held within a foot of my face; added to which, this was now not only in the *right* eye which

had never been more than slightly affected before, but a similar though less obscurity was making progress in the *left* eye also. I therefore sent immediately for an eminent surgeon-oculist, whom I will beg leave on this occasion to designate by the name of *my friend*, a name to which his kindness and attention give him a just claim. He came to me soon after, and upon examining the eyes, remarked, that there was no opacity in the cornea; a circumstance which I had noticed myself before his arrival as different from every former attack; though from the dimness of my vision, I could not ascertain this so well as he did: I cannot describe this peculiar state of vision better than by saying, that every object which I could discern appeared of a dusky gray colour as if obscured by smoke or steam; and such as I conceive would be the case, if the aqueous humour of the eye had lost its limpid transparency, and acquired the blueish gray tint, which I have noticed in some mineral waters. I held this as probably indicating an opacity of the capsule of the crystalline lens, or of the vitreous humour; and I could perceive from my friend's manner, that he had much doubt about my recovery. I then stated to him the steps that I had already taken, all of which he approved of, excepting the opium; advising me by all means to abstain from it, as it would tend to weaken the vessels of the eyes, and certainly *retard*, if not, in the end, *entirely prevent* them from regaining their natural strength. However reluctant I felt, at giving up the employment of a medicine from which I had found at least temporary relief, yet considering the disease as now altogether beyond my own management, and having the utmost reliance upon his judgment founded on long experience and extensive observation, I determined to submit to whatever measures he might think proper. As the most ready means of lessening the extremely turgid state of the vessels on the tunica adnata, he proposed scarification; which was immediately performed, by drawing down the lower eyelid, and scoring its surface in several places with the shoulder of a lancet, so as to take away about

a tea-spoonful of blood. No sensible relief attended this operation; on the contrary, the clots of blood which formed upon the incisions during the night, acted like so many foreign bodies, and aggravated the pain whenever the eyelid moved upon the ball. In addition to this, he recommended fomenting the eye with a decoction of poppy-heads, which was accordingly employed, as soon as it could be got ready. I had always found ease before from cold applications; and the present trial of an opposite temperature, concurred to strengthen my former experience; for the pain became so much worse under the fomentation, that I could not continue its use above a few seconds. Observing no abatement of inflammation when he came next day, he conceived that the failure depended upon the quantity of blood evacuated, being too small to lessen the congestion: and, as a more adequate depletion, opened the vein which runs between the inner canthus of the eye, and the nose, and drew away a large tea-cupful of blood (about six ounces). During this operation, I thought my head felt lighter, and the eye less stiff and full; but the relief did not last much beyond the flowing of the blood; and the pain at night, with the redness and turgescence of the vessels next morning, were exactly the same as before. My pulse being now languid as to strength, and unaccompanied either by hardness in its stroke, or by febrile heat of skin, he did not consider farther loss of blood, either generally or topically, at all advisable; but recommended a large blister to the head. I accordingly had my head shaved without delay, and a blistering plaster applied over the whole of the scalp, extending from one ear to another, and from the top of the forehead to the nape of the neck. Notwithstanding what might have been expected from the irritation of so extensive a surface, I certainly slept better than I had done for the three preceding nights; but this was all the advantage it procured, as the inflammation was not in the least diminished by it; and the succeeding night was attended with the same severity of pain as before. I now, agreeably to his desire, took a quarter of a grain of the muri-

ate of quicksilver, dissolved in half an ounce of the spirit of nutmeg, and diluted with half a pint of warm water-gruel sweetened to the taste. This excited most profuse sweating for several hours, and gave me greater ease than any thing which had previously been done: indeed I had observed in former and slighter attacks, that sweating always procured relief from pain, especially while the diaphoresis was present. I accordingly repeated the same medicine on the following night with very sanguine expectations but by no means with equal success, the pain being more severe although the sweating was nearly the same. The third night it failed entirely; and owing to the nutmeg spirit then employed being made by uniting the essential oil with proof spirit by triturating it with sugar, instead of distilling them together, the muriate of mercury was probably not completely dissolved; in consequence of which it occasioned considerable sickness and vomiting: observing, however, that as often as I strained to vomit, though nothing was brought up except the gruel, the pain of the eye was sensibly lessened for a short period, I conceived that fuller vomiting might be attended with still greater and more permanent benefit, and with this view got to a medicine chest which stood in the room, and guessing five grains of tartarised antimony by lifting it between my finger and thumb, I placed this in the palm of my hand, and by wetting the point of my finger, took up what I supposed might be from half a grain to a grain: I swallowed this quantity every quarter of an hour, until I became very sick, and vomited several times: after which I got ease and fell asleep. Next day, the eye appeared exactly as before; and feeling great debility, and loss of appetite, I did not recur either to the sweating or the vomiting plan. The nocturnal exacerbation of pain having now become greatly aggravated, as well as more distinctly marked in its remitting form, I had recourse to the cinchona, from which I had formerly experienced such remarkable advantage; but although taken in the same way, and in doses of a drachm every four hours, it produced no sensible effect. One

article still remained, which is known to possess extraordinary powers in the cure of intermitting fever, even where the Peruvian bark has failed; I mean the arsenical solution. This, therefore, I had recourse to, in doses of ten drops three times a day; but after two days' trial, it occasioned such loss of appetite and of general strength, without any perceptible advantage to counterbalance these effects, that I abandoned it as I had done the rest. I was now left in the middle of the third week, apparently without any resource; my sight being only capable of distinguishing between day and night; the flame of the candles upon the table appearing like two drops of blood, and the fire, when burning bright, like a mass of red-hot iron, whilst all around was utter darkness: in addition to which, the paroxysms of pain through the night could only be compared to screwing the eyeball out of the socket; and the only ease I had from this, was by sitting up in bed, with a wash-basin of cold water placed between my knees, and dipping a towel in this, which I applied to both eyes. Just so long as the sensation of cold lasted (the ground was then covered with snow), so long was the pain rendered bearable; but as soon as the wet towel acquired a little warmth, the pangs returned as before. Worn out by suffering, and with the melancholy prospect of irremediable blindness before me, I resolved to obtain ease at all events, by having recourse to opium; and wishing to procure this more particularly in the night, when the pain was always worst, I took *two* grains of solid opium at six o'clock in the evening. I can scarcely express the delight I experienced on finding, that instead of the paroxysm coming on between seven and eight, as usual, I felt quite easy; and on going to bed at ten o'clock, got into a sound sleep, from which I awoke greatly refreshed and free from pain, at eight next morning. The next day also, was comparatively a day of ease; and it will readily be concluded, that I did not fail to take the opium again as on the preceding evening. The second night, like the first, was *a night of bliss*, which was perhaps the more apparent, by my not sleeping at all, but lying *in perfect ease*.

On the following morning, my friend called, after an absence of two days (for indeed I believe the obstinacy of my case had put his kind attention to a severe trial by previous daily attendance); and it was with unspeakable pleasure, I heard him pronounce my eyes considerably better. I then candidly stated to him, that the severity of my sufferings had compelled me to disobey his injunctions against taking opium; and that, as I had left off every other medicine except the occasional use of colocynth pill with calomel, as a laxative, I could only attribute the amendment to the effect of that remedy. Under such circumstances, he admitted, that I should continue its use; observing, however, that there was either something very singular in the nature of the case, or that opium was peculiarly friendly to *my* constitution. Notwithstanding the strong proofs which I already had of its beneficial influence, I was by no means free from fears, that in thus procuring temporary relief, I might not ultimately do injury to my eyes; and believing that I had now in my power the means of effectually checking the farther progress of the disorder, I was determined to maintain my professional allegiance, by abstaining from opium until it became imperiously necessary. Accordingly, on the third evening I did not take my dose as before at six o'clock, but waited the coming on of the paroxysm; and though not without some anxiety, yet certainly with greater hope, that I might either escape the attack altogether, or have it in a very mild and bearable degree. At eight o'clock, I observed the usual precursor, a feeling of soreness, aggravated by pressure, in the integuments round the eye, and especially at the *infra* and *super-orbitary* holes, through which the nerves pass to supply these parts. In twenty minutes the pain became very severe, and I immediately swallowed two grains of opium. At nine o'clock the pain, instead of abating, was evidently upon the increase; I therefore repeated the dose; and having remarked that the full effect of any individual dose of this medicine is generally experienced in three quarters of an hour from the time of taking it, I determined to re-

peat the same quantity *every hour* at farthest, until relief ensued; and as no sensible abatement took place from what was previously administered, I persevered at the assigned intervals, until I had swallowed *ten grains* of solid opium, without the smallest alleviation of my sufferings. At twelve o'clock, I became stupid to every sensation, except that of agony; and retired to bed in a state which can better be conceived than described; nor do I exaggerate the description of my wretchedness when I declare, that I should have blessed the friendly hand which presented a pistol to terminate my existence. For *fourteen hours and a half*, I lay in this struggle between stupefaction and torture; the muscles of the right side of the face quivering with pain as if torn from the bone, and a continued stream of scalding tears running down the cheek, whilst the eye-ball itself was, at intervals of only a few seconds, affected with a convulsion that made every limb shake with the agony. At half past eleven o'clock in the forenoon, the power of suffering was itself worn out, and from that time till five in the evening, I lay in a state which alarmed the people in whose house I lodged, as I neither called for nourishment, nor even rang the bell to say I wanted assistance of any kind. My conviction, so dearly purchased, was now complete; and I resolved, whatever might be the ultimate event, never to pass such another night, whilst I had the certainty of relief within my power. Accordingly, at six in the evening, I took *three grains* of opium, with the same happy effects as at first; and by repeating this every evening at the same hour, I not only completely prevented all recurrence of pain, but in the course of ten days, was able to go out daily in a carriage to visit a patient at Canonbury; and at the end of three weeks, resumed my hospital business and lectures as before my attack.

The case just related, offers grounds for much new and interesting inquiry respecting ophthalmia in general, and particularly that form of it which has committed such ravages among those of our soldiers and seamen who were employed

in the expedition to Egypt: as I was strongly inclined to believe, that they bore a considerable resemblance to each other in many essential points. At present, however, I have no leisure for so extensive an investigation; and were I even so disposed, I have not had sufficient opportunities of seeing the Egyptian ophthalmia, as it has been prolonged or propagated in this country, to qualify me for such an undertaking.

One circumstance has surprised me greatly, which is, that in the course of a pretty extensive examination of authors, both ancient and modern, which I have been obliged to go through in order to collect materials for my lectures, I have not met any case resembling my own. Does this proceed from its being unique in its kind, or from want of due discrimination in those who have treated on ophthalmia, especially in its epidemic form? However reluctant to admit the latter conclusion, yet I am compelled to do so when I affirm, that notwithstanding the almost exclusive treatment of such complaints by the oculist, and the consequent infrequency of their coming under the cognizance of the physician, I have myself met with several of the same kind; and, therefore, reasonably presume, that I am not the only person to whom they have occurred. Being hereditarily of a gouty constitution, and having had to the amount of six or seven severe and regular attacks, beside many slighter and irregular ones, it might be imagined, especially as gouty ophthalmia is mentioned by a few authors, that mine was of that description; and such indeed was the opinion of the friend who attended me; as he acknowledged, that on no other ground could he account for the disorder giving way to opium, while it resisted every mode of treatment which he had before found successful. At first I was disposed to admit this reasoning; but from subsequent attention to the disease, as it has occurred both in myself and in others, I am satisfied that it is not correct: for three of the cases which I have seen besides my own, were in females, who are well known to be very rarely the subjects of gout, comparatively with men; and in no gouty attack which I have

ever had in the inflammatory form, did I ever receive any considerable relief from opium. The *progress*, likewise, of the two forms of disorder is very different; for I have had gouty paroxysms of various intermediate duration between ten days and six weeks, whereas the ophthalmia, in three distinct attacks posterior to the one related above, has regularly assumed the febrile period of *three weeks*, so markedly so indeed, that in three of a milder degree which occurred in 1806, 1810, and 1811, although by the use of opium I kept the disease so completely in check, as not to be confined from my business a single day, yet it ran its usual period. But a very curious circumstance yet remains to be mentioned, which will, perhaps, of itself be sufficient to disprove the alleged gouty nature of my ophthalmia in 1802-3. It must be remembered by most of the members of this Society, that the month of January, 1803, was that in which a very violent, and in many instances fatal, catarrhal pneumonia prevailed in London and its environs particularly, but I believe also, though in a less degree, in every part of England. The same disease had previously appeared in some part of Germany, whence it spread to Paris, where it raged with unusual violence under the name of *la gripe*; and it had begun to decline at Paris, about the time it arrived at its greatest height in London. From the date of the memorable influenza of 1782, which was perhaps the most universal ever recorded (having traversed the earth in a westerly direction, from the Tartar hordes contiguous to the Great Wall of China, and finally spent itself in the West India Islands and America), I had never escaped an epidemic catarrh in its ordinary form, until this time. My escape on this occasion may indeed be accounted for, upon a principle which, though not universal, is yet so general as to be admitted among the laws of the human constitution, viz. that one disease supersedes, or prevents another of an analogous nature, from taking place at the *same time*; and it will readily be granted, that my constitution was sufficiently occupied by one kind of suffering, to entitle me to an immunity from any other

as long as the first continued. But will this, as applied to my case, explain why the same freedom from catarrh should equally attend *many other* persons who were affected with ophthalmia about the same time as myself, although in so trifling a degree, as scarcely to confine them to the house? Mr. Stocker, Apothecary to Guy's Hospital, and several of his family, had slight ophthalmia during the prevalence of the influenza; but not one so affected had any attack of catarrh. A person who came to me on business during my convalescence, observing that I wore a shade and green spectacles, told me that he had been himself a sufferer, about three weeks before, with the same complaint in his eyes, as had many of his neighbours, and of his workmen; and upon inquiring whether he or they had also the influenza, he said it had been remarked by all as surprising, that they escaped the epidemic cold. During the summer of 1803, I met Sir James Fellowes, who had lately before returned from Paris, where he was during the whole time that *la gripe* prevailed; and upon mentioning to him the singular connexion between it and ophthalmia in London, he informed me, that a similar coincidence was noticed in France, with this unaccountable difference however, that *there* the catarrhal pneumonia *preceded* the ophthalmia; but that the immunity was the same in both places; no person who had laboured under *la gripe* being known to suffer afterwards from inflammation of the eyes: Dr. M'Donnell, of Orchard Street, Portman Square, who was likewise in Paris at the period referred to, confirmed by his testimony the information of Sir J. Fellowes, both as to the *order* in which the two forms of complaint took place, and to the exemption which each of them afforded against the other.

The evidence which I have here adduced, will perhaps be deemed by the Society quite sufficient to decide the question in the negative, as to the alleged gouty nature of the ophthalmia; but whatever doubt might remain on that point, it must be entirely done away by the account I shall now give of my last attack, which I watched most minutely through its

several stages, with a view to place this circumstance beyond controversy in future.

In the latter end of March 1812, I had a smart fit of gout, the violence of which was greatly mitigated by taking two half bottles of the eau medicinale at the distance of four days, so that I was enabled to go about, though still with inflammation, swelling and pain; and at the end of a month from the commencement, the symptoms spontaneously ceased, leaving me in better general health than I had been for a considerable time. During the latter part of May, though able to walk very well, I was prevented by the coldness and wetness of the weather, from taking any exercise on foot, which is the only kind that is either pleasant or beneficial to me. On Monday the fourth of May, the weather became suddenly much finer than it had been for many weeks, and I determined to avail myself of the change, by dismissing my carriage in Oxford Street about three o'clock, and doing the remainder of my business on foot. The sky was perfectly free from clouds, and the sun considerably hot; but the wind was easterly, and had a bleak chillness in it, which made the alternate sensations of heat and cold, accordingly as I was in the sunshine or shade, peculiarly unpleasant. In passing along Fleet Street on my return home, about five o'clock, I felt suddenly a painful sensation in the lower part of my right eye, exactly as if a person had forcibly thrust the end of his finger against the under eyelid; and as this took place not only without any obvious cause, but as the dull pain continued, though in a less degree, during the remainder of the evening, I had no doubt but it was a prelude to a severe attack of ophthalmia. As soon as I could examine the eye, I found my alarm was but too well grounded, for there appeared a stream, as it were, of red vessels running from the lower part of the eyeball to the edge of the cornea, exactly at that part where I had felt the pain at first. I lost no time in taking two grains of opium, which procured me a very good night; and as the eye was scarcely at all painful, and had become but very little redder when I looked

at it again the next morning, I flattered myself that I should escape without much inconvenience. When the evening came, however, this hope was done away, as the pain recurred, and compelled me to take three grains of opium to get relief. The following morning the eye was very red, and the sight so obscure, that I could scarcely read a letter. As the treatment differed in no respect from that which I have already detailed, it is unnecessary to repeat it here; suffice it to say, that by pursuing the same plan now, I was not kept within doors more than three days, and these not in succession; for after staying at home on Thursday and Friday, I felt so much better on Saturday that I made a number of visits, and in the evening sent to apprise my friend Dr. Babington, who was lecturing for me, that I should resume my hospital duties on the Monday. Very early on Sunday morning, however, the pain came on with great violence, so much so indeed, that it required six grains of opium taken within the first hour, to render it bearable; and eight grains more, at different periods through that day, to keep it off. In the course of the succeeding week the inflammation abated, and a *second* time did I, at the distance of seven days, announce my intention of returning to lecture; but a *second* time was I disappointed, by the vessels of the eye becoming still more distended, though not more painful than before; and the vision with that eye being as much obscured as in the attack of 1802-3. At the end of the *third* week the pain ceased entirely, and the redness abated so fast, that in four days more I returned to the discharge of my several duties as before my attack.

The complaint, in this instance, differed from that of 1802-3 in two particulars, viz. that the *diurnal* exacerbation of pain was not so great as it was then, whilst the septenary or *hebdomadal* stages were much more distinct; in which respect the first partook more of the intermitting, the latter more of the continued febrile type.

Account of the Muscles of the Ureters; and their effects in the irritable states of the Bladder, by CHARLES BELL, Esq. F. R. S. Ed. Teacher of Anatomy in Great Windmill street.

[From the Medico-Chirurgical Transactions, for 1812.]

I AM about to describe a set of muscles which seem not to have been observed by former anatomists. They are attached to the orifices of the ureters, and are seated in the bladder. In health they are the instruments of a very peculiar organic action, and in disease the cause of most distressing complaints.

Before I proceed to describe the anatomy of this part of the bladder, the subject seems to require, that I should give a short historical review of the opinions respecting it.

Of the parts hitherto described as seated at the neck of the bladder—La trigone de la vessie—La Luette—Uvula Vesicæ—Corpora carnea Morgagni.—Third lobe of the prostate, &c. &c.

In the plates of *De Graaff* there are represented certain folds extending forward from the orifices of the ureters, where they terminate in the cavity of the bladder; and at the lower part of the orifice of the bladder, there is a tubercle faintly indicated. The same appearance is represented by *Bidloo*. In *Santorini* also the natural appearance of these parts is accurately delineated. *Morgagni* expresses himself to this purpose: "at the points where the ureters terminate in the bladder, there arises from each of them a thick round compact fleshy body, which takes a direction towards the orifice of the bladder. These two bodies having proceeded a little way, are united, and proceed forward, terminating in the *caput gallinaceum*.*"

* See Morgagni *Adversaria* I. n. 9. *Adversaria* III. *Animadver.* XLII.

*Santorini** gives the same description of these parts as Morgagni has delivered.

Lieutaud describes these bodies under the term *la trigone de la vessie*. The learned Portal is incorrect in saying that *Lieutaud* was the first anatomist who has given their description.

Portal has thus described the *trigone*: at the lower part, the internal tunic of the bladder adheres to a triangular body of a cartilaginous hardness, and this body is always prominent in the cavity of the bladder, especially in old men. He proceeds to say, that, at the extremity of the triangle, backwards, the orifices of the ureters open; and at their anterior extremity, there is an eminence slightly protuberant, to which *Lieutaud* has given the name of *luette*.

This account leads me again to refer to the plate of the excellent anatomist *Dominico Santorini*. In his second table the *luette* and *trigone* are accurately represented.

He has the following explanation on the letter I. "*Vesicæ urinæ osculum cui prominulum corpus præfigitur; quod in affectis vesicæ sic prominet aliquando ut urinæ iter prorsus intercludat.*" This refers to the disease with which Mr. Hunter and Mr. Home have made us familiar.

The expression of *Santorini* recalls us again to the remark of *Portal*: he says, "I have found in old men who have suffered retention of urine, the *trigone de la vessie* so enlarged, especially its tubercle, in the form of an uvula (*luette*) that the orifice of the bladder was shut by it†."

Sabatier follows his countryman in his description of this part of the bladder, but adds; "the *trigone* and *luette* are the most sensible parts of the bladder; which is the cause why a stone lodging here produces extreme irritation, while if it lodges in any other part of the cavity of the bladder, it causes little inconvenience:" he adds, "the uvula (*luette*), which terminates the anterior angle is very subject to swell, and then

* In the *Observationes anatomicæ*, cap. x. sec. xxi.

† *Portal*, *Cours d'Anatomie Med.* T. v. p. 409.

it rises in the form of a round tumour which fills the neck of the bladder, and opposes itself to the flow of urine.”*

Desault, speaking of the tumours which grow in the bladder, has this expression. “Le sommet de ce viscère n’en est pas plus exempt, que son basfond; mais ce sont particulièrement ceux qui croissent près de son col, et que quelques auteurs ont pris pour un gonflement de la luette vesicale, qui occasionnent la retention d’urine.”

This sentence, which betrays the imperfect knowledge which *Desault* had of the disease, is followed by other unequivocal marks of unconfirmed principles and practice: and the whole chapter stands in remarkable contrast with the publication of *Mr. Home*, in this country.

In *Haller’s Element. Physiolog.*† we have a description following that of *Morgagni* under the title *colliculi ab uteribus in urethram producti*.

These authorities discussed, we come now to the more modern observation of *Mr. Hunter*.

Mr. Hunter‡ has described a small portion of the prostate gland which lies behind the very beginning of the urethra; and this he describes as subject to swell out like a point into the cavity of the bladder, where it acts like a valve on the mouth of the urethra. This can be seen even when the swelling is not considerable, by looking upon the mouth of the urethra from the cavity of the bladder.

It is impossible to mistake this; the swelling he describes is the *uvula vesicæ* or *luette* of *Lieutaud*. The observations of *Mr. Hunter*, then, go to inform us, that this tumour is of that part of the prostate gland which is below the urethra, and betwixt the lateral portions of the gland.

This discovery carries us back to the great anatomists in whose works we find the elements of all our present knowledge. *Morgagni* has very fully described the part of the

* See also *Lieutaud*, *Hist. Anatomic. medica. tumores vesicæ adnati*.

† T. v. p. 328.

‡ P. 170.

prostate gland which Mr. Hunter mentions, and which he discovered to be the seat of this dangerous malady. Morgagni thus describes it:

“Quod si vera ulla propago prostatæ addenda est, ea certe est subrotunda et renitens quasi glandula, quam cum sæpe diligentissimus incisor noster in publicis dissectionibus animadvertisset inter vesicam, et seminales capsulas qua sese mutuo hæc jam contingunt, prominentem et nonnunquam ad angulum conveniendo, efficiunt, prostantem nos accurato instituto examine nihil aliud esse comperimus quam corporis ipsius prostatæ particulam.”*

In addition to the description of Morgagni we have the authority of Sabatier. “Sometimes,” says he, “only that part of the prostate is diseased to which they have given the name of *lucette vesicale*. I have seen several occasions (he continues) in which the uvula forms a tumour with a narrow peduncle: this, moving with a stream of urine, closed the opening of the bladder.”†

Anatomy of the Neck of the Bladder.

I have now to lay before the society the anatomy of the neck of the bladder in man.

On dissecting up the inner coat of the bladder, there are seen two strong fleshy columns, which descend from the orifices of the ureters towards the orifice of the bladder: they unite and run towards the prostate gland. On the surface, towards the cavity of the bladder, they are denser by the union of the inner coat of the bladder, but they are fibrous, and this fibrous structure is made manifest by dissection from below. They are larger and firmer, but of the same colour and structure with the fleshy columns of the *detrusor urinæ*. The variety which we find in their length according with the degree of contraction of the bladder, proves their muscularity.

* Morgagni, *adversaria anat.* IV. animad. XV.

† *Med. Operat.* T. II. p. 72.

Whatever excites the action of the bladder increases the size of these muscles in a remarkable degree, and they always acquire a great increase of power and size when the muscular coat of the bladder becomes more distinct and powerful. In some of my specimens of diseased bladder, I find the cause of this to be stone in the bladder; in others, an ulcer; in many, stricture; but always irritation and the necessity of continual action of the bladder are attended with an enlargement of the muscles of the ureters.

When contracted, the course of these columns is distinguishable all the way from the mouths of the ureters to the beginning of the urethra; and there, at their union, they heave up the inner coat of the bladder, producing the appearance of a tubercle at the lower part of the orifice of the bladder.*

It is still the form of the inner coat which makes these fleshy columns appear to terminate forward in the caput gallinaceum; which they do not; they only take a firmer insertion. Where these columns unite they are most fleshy, and their fibres are more intricate; then, directing their course towards the lower and backmost part of the prostate, they degenerate into tendon, and are inserted into the portion called the third lobe of the prostate.

Although I have described the course of these muscles as proceeding from the back part forward, because it better corresponds with the first view we have of them, yet, I believe it is more correct to consider their connection with the prostate gland as the fixed point, and their connexion with the extremities of the ureters as their insertion.

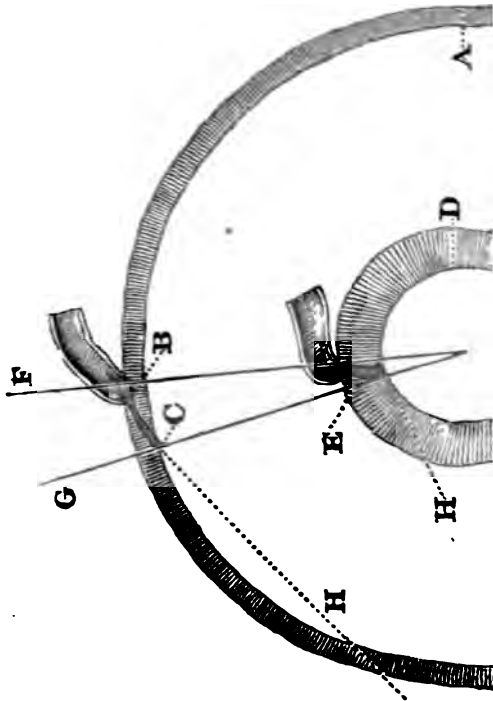
Use.—The use of these muscles is, to assist in the contraction of the bladder, and at the same time to close and support the mouths of the ureters. The surface of the bladder where it covers their union on the inside, is endowed with an ex-

* It is this appearance, presented by the muscles in a state of contraction, which has led so many of our best authorities to confound it with the disease of the third lobe of the prostate gland.

quisite sensibility, which is a provision of nature, for their ready and instantaneous action on the stimulus to pass the urine. It is here that is seated that sensibility which produces the natural call to urine, and here also is the seat of diseased irritations.

It will be observed that the orifices of the ureters are not closed by the contraction of the muscular fibres around them. They are defended against the return of the urine by the obliquity of their passage through the coats of the bladder. It is well known that the extremity of the ureter enters through the coats of the bladder obliquely, and that in consequence of this, there is a valvular action in the coats of the bladder which prevents the regurgitation of the urine into the ducts of the kidney.

But if we look to the adjoining diagram, and consider the subject, we shall find, that in proportion as the bladder contracts, this obliquity must be diminished; and further, if we reflect that the coat which contracts is on the outside of the oblique passage of the ureter, we shall conclude, that without some counteracting power on the inside of the bladder to draw down the orifice of the ureter, the obliquity of the passage would be lost. These muscles, which I have now described, guard the orifices of the ureters by preserving the obliquity of the passage, and by pulling down the extremities of the ureters according to the degree of the contraction of the bladder generally.



Explanation of the Diagram.

Let A. represent the circle of the dilated bladder.

B. The *ureter* or duct of the kidney entering the coats of the bladder.

C. The extremity of the duct opening on the inside of the bladder.

B. C. mark the oblique course of the *ureter* through the coats of the bladder.

Let D. represent the contracted bladder, thickened at the same time by its contractions.

E. The *ureter* passing through the coats.

The lines F. G. drawn from the centre of the circle will intersect corresponding portions of both circles, and demonstrate how the oblique passage of the *ureter* through the coats of the dilated bladder becomes more direct in the contracted bladder.

The muscles described act in the direction of the line H. and its operation is to draw down the orifice of the *ureter* C. in proportion as the bladder contracts; by which means the obliquity of the passage is preserved.

The membrane which covers these muscles is the seat of that sense which calls the muscular coat of the bladder into action. Of this we may be sensible in passing the bougie, and still more in passing the urethra sound. As the instrument is passed down the urethra, there is a sickening sensation; as it passes the caput gallinaceum, the nature of the pain is changed; and, lastly, in passing it over the surface of the triangular elevation, produced by these muscles, there is experienced the familiar sensation of the call to pass urine. If it were doubted that here, in a particular manner, is seated that sensibility, which calls the bladder into action, the effect of a stone falling upon the part is sufficient proof. When a patient has a stone in the bladder, there is pain and excitement while it rests in this place, and relief when it lodges elsewhere. The reason why this part is possessed of such sensibility, I apprehend to be, that the muscles of the ureters may, as it were, be the first alarmed, in order to guard the mouth of the ureters, and preserve their obliquity during the action of the bladder.

Action in Disease.

When the sensibility in the seat of these muscles is increased by disease, and the increased sensibility is accompanied with a continual action of the muscles, the prostate gland must suffer unusual excitement. The natural prominence formed by the muscles being directly over the third lobe of the prostate, and their chief attachment being also to this third lobe, we may perceive how it happens that this part is sometimes enlarged without the body of the prostate gland partaking much in the disease. When there is an unusual *nisus* of the bladder, these muscles are the seat of it; and as their united extremities are attached to the lower and middle portion of the prostate gland, they must, I think, promote the growth of this portion in a direction towards the cavity of the bladder. This will produce the true *uvula vesicæ*, the pendulous tumour in the neck of the bladder resembling the uvula of the palate.

This tumour hangs into the cavity of the bladder, and falls like a valve upon the orifice of the bladder, proving a most troublesome and dangerous obstruction to the urine.

But whilst I state this as an opinion, drawn from the consideration of the parts in their natural state, I must also submit the naked facts. I have, in my collection, two specimens of the disease of the third lobe of the prostate, where these muscles are remarkably strong. I have, on the other hand, some specimens of diseased bladder, where the muscles of the ureters are enlarged; and only in one of these is there a beginning enlargement of the middle lobe of the prostate gland.

I have many specimens of bone distorted by the action of the muscles; and many, where, at the attachments of the tendons, the bones are drawn out into spines and tubercles. We may say, such is the effect of the muscles; but though the growth of such spines or tubercles be the effect of the action of the muscles directly, yet these spines will not be formed, unless when the bones are at the same time suffering from disease. So, in considering the action of the muscles of the ureters as influencing the growth of the prostate in a particular direction, I do not imagine that the muscles will do this merely by their mechanical effect. There must be also a disposition to disease in the prostate; and if disease be not present, the irritation of the bladder will continue even till the death of the patient, without affecting the growth of the gland.

On the extremities of the ureters, in the diseased action of the bladder, the contraction of these muscles is converted from a salutary influence, to one which aggravates disease. They still close the mouths of the ureters during the action of the bladder; and the action continuing, they cause an accumulation in the ureters and pelvis of the kidney, and influence the kidney itself: thus increasing the extent of the local disorder, and consequently its influence on the constitution.

Such consequences as arise from the irritation and action of these muscles, are to be relieved by removing the cause,

by assuaging the sensibility of the surface of the tubercle, and by drawing off the urine. When we know that this spot, on the lower part of the orifice of the bladder, is the seat of that irritability which is so distressing, we see that it is practicable to effect it by the use of the bougie. By the introduction of the catheter, the urine is let off without hindrance from the valve: the distressing excitement of the muscles is not perpetuated, and the prostate subsides from its irritation.

This practice, though a direct deduction from the examination I have made, is no more than the advice given to us by the best authors.

Thus we see that a small tubercle was painted by De Graff, and described by others, but the nature and origin of the tubercle was misconceived. Anatomists were calling it *uvula vesicae*, as if that natural prominence was the same with the *tumour* of this part of the bladder. We find that the disease called *uvula vesicae*, is no more than that occasioned by the enlargement of the third lobe of the prostate gland. To Mr. Hunter and Mr. Home, we are indebted for a full knowledge of the nature of this disease. It has been objected to Mr. Home, that he is in vain making that important, which the great anatomists of all ages have failed to discover, or have neglected to notice. I have shown that the third lobe of the prostate was known to Morgagni, and that it was a subject of discussion in his day. We have sufficient evidence (even on this very subject) of the difference of a fact being noticed in the elaborate works of Morgagni, and of its being familiarly and practically known to surgeons. The third lobe of the prostate was quite forgotten, the consequence was that we were ignorant of the nature of the most fatal disease of the bladder. It would be disingenuously reserving the circumstance, which drew me to attend to this subject, were I to omit the mention of the late work of Mr. Home, or rather his original paper on the anatomy of the prostate gland. I acknowledge both the merit and the necessity of what he has written: for the observation of Morgagni, and the hint of

Sabatier, were forgotten both here and in France, until the subject was distinctly and practically brought forward by Mr. Home. Even the latest French author, Richerand,* still speaks of the enlargement of the anterior angle of the "*trigone vesicale*," and the growth of *fungosities* near the neck of the bladder obstructing the course of the urine.

It still remained to be explained, why the small part of the prostate gland, the third lobe of Mr. Home, should be so frequently enlarged, without the affection of the body generally being apparent, or why this part should enlarge more rapidly than the rest of the gland. It was in the prosecution of this inquiry, that I discovered the muscles of the ureters; and after ascertaining their nature, I saw through the obscurities of authors, in treating of the diseases of this part of the bladder; so that, in speaking of the enlargement of the anterior extremity of a natural tubercle, they were deceived; and that, in treating of the *uvula*, they were describing the diseased prostate gland.

History of a Case of Anæsthesia, by JOHN YELLOLY, M. D.
Physician to the London Hospital.

[From the Medico-Chirurgical Transactions, for 1812.]

THE following case exhibits an example of the loss of sensation in the upper and lower extremities, independent of paralysis: and as some of the particulars are curious, and the occurrence of such a complaint is exceedingly rare, I have drawn up an account of it for the use of the society.

I. S. aged 58 years, a native of Scotland, resided for many years in Jamaica as a planter; and with the exception of being now and then bilious (to use his own term) he enjoyed, during the whole of this period, very good health. About three years

* *Nosographie Chirurgicale*, ii^e. ed. p. 458.

ago, after being much heated and fatigued in his attendance, as one of the grand jury in Kingston, in very sultry weather, he went to bed with the window open. On awaking in the morning, he found his feet and ancles perfectly numb, but without any sensation of pain, and without the muscular power being at all affected. Soon afterwards, he felt a numbness, with a tingling pain in his little finger, such as occurs in a part which is said to be asleep; and, by degrees, finger after finger became affected, until the whole of both hands was in a considerable degree insensible. He never had any pain or giddiness in the head, nor was he ever affected with the dry colic, which so often gives rise to paralytic affections in the West Indies.

A physician of eminence in Jamaica confidently assured him, that his complaints originated from scurvy in some lurking form or other; but it does not appear that Mr. S. ever had the least appearance of cuticular affection, till about twelve months after the occurrence of the numbness, when some red pimples showed themselves in his legs, on his lying down on the ground, after being much heated by walking up a steep hill.

He arrived in this country on the 20th of July last; and from the time of my first seeing him, (which was on the 25th of October) till now, he had been as nearly as possible in the same state, except that his appetite and digestive powers, which were then a good deal affected, have been for some time past much improved.

The following are the principal circumstances which I have had occasion to observe relative to this case.

The hands, up to the wrists, and the feet, half way up the leg, are perfectly insensible to any species of injury, as cutting, pinching, scratching, or burning. The insensibility, however, does not suddenly terminate; but it exists to a certain degree, nearly up to the elbow, and for some distance above the knee. He accidentally put one of his feet, some time ago, into boiling water, but was no otherwise aware of the high

temperature, than by finding the whole surface a complete blister on removing it. No species of injury to a vesicated part, of either hands or feet, is felt by him. The extremities are insensible to electrical sparks taken in every variety of mode. The cubital nerve where it passes the elbow communicates the sensation produced by pressure or a blow only half-way down the fore-arm.* He perspires much in the left side, just above the hip, but no where else. He is generally rather chilly, and the extremities are cold, except when he is in a comfortable room; and in this case they are of the usual temperature of the body. The thermometer however rises to 101° in the mouth. The hands are of somewhat a purple hue. If he wishes to ascertain the temperature of any body, he is under the necessity of putting it to his face or neck, or the upper part of his arm. His skin seems to be more than usually sensible to the effects of heat. On putting his hand, at the desire of a friend, into a pail of hot grains, which his friend assured him were not too hot, and to convince him of this, previously thrust his hand and arm into it, there was a very extensive vesication produced. His hands are never free from blisters, which he gets by inadvertently putting them too near the fire; and he has met with several severe burns, without being aware of it. No degree of pressure is felt by him; but a blow produces a slight degree of tingling. He has a general uneasy sensation in the extremities, which warmth rather relieves. His skin, in general, heals very readily, after being burnt or scalded in the most severe way; and there is no fever, nor is there, as far as he has been able to determine, any increased heat or throbbing during the process of healing. This

* I have remarked in some cases of paralysis from Colica Pictorum, that this nerve has its sensibility very much diminished; and in the case of a bricklayer, in whom there was a total loss of power, and in a considerable degree of sensation in both of the fore-arms and hands, from sudden exposure to cold, after working in a very hot furnace, the cubital nerve was totally insensible to any degree of pressure or force applied to it. It is probable that a similar insensibility might have been found to exist in other nerves, had they been accessible.

seems to be also the case with some other parts of his body which are not altogether insensible; for a little time ago, he got burnt in the front of the patella, and though there was a considerable slough separated in consequence, he suffered no pain, and little inconvenience during the cure.

If the heat to which the insensible parts are exposed is moderate, vesication is not immediately produced. The part becomes red, and in a few minutes, but sometimes not till the lapse of an hour or two, is blistered. That a smaller than ordinary temperature produces vesication in this individual, seems to be ascertained by the circumstance, that exposure to the heat of a common fire gave rise to a blister in the knee, which was followed by the slough abovementioned, though the clothes which covered the part, were not at all injured. Immersion in water at 120° produces no change in the affected parts; but exposure to the same temperature at a common fire, speedily blisters. That degree of heat, is, as far as I can judge by myself, about the utmost which can be long borne by the hand, in ordinary circumstances, without pain.

Cold water and warm water of every temperature invariably appear lukewarm to him. Water at the freezing point produces no degree of sensation whatever; but when his hand is kept in it for some time, he feels a slight coldness at the end of the thumb. After his hand had been immersed in water of the common temperature, and was introduced into water of 32° , he had some sensation of warmth. The cold produced by means of a mixture of snow or ice, and salt, communicates no sensation except a slight chilliness in the thumb, and when this freezing mixture follows the use of water of the common temperature, it produces a slight degree of warmth. A solid body produces no sensation, whatever its temperature may be.

The power of motion exists in the muscles of both hands and feet. With the former he can grasp pretty firmly; but in holding any thing he is apt to drop it, if his attention is at all called away. There has been of late a slight loss of substance in the hands.

He can lift a chair, but cannot raise himself from the ground, by taking hold of any thing placed above him. The susceptibility of impression, generally, as well as the muscular power, seem to be in this individual in some degree diminished.

The functions are natural, and the pulse regular and moderate.*

In the treatment of these symptoms, no advantage has been derived from any plan which I have myself adopted, or which has been employed by others. The warm bath, electricity, galvanism, tonics, the rhus toxicodendron, and mercury, given both with a view to its action on the bowels, and the system at large, have been equally unavailing; though it must be owned, that the patient has never shown a sufficient degree of perseverance in the prosecution of any means which have been adopted for his relief.

The possession of voluntary power over the muscles of the hands and feet, which do not derive their origin above the part where sensibility commenced, might seem to be incompatible with a total loss of sensibility in such muscles; and it might therefore be imagined, and with some appearance of truth, that the insensibility was confined to the integuments. From the observations which I had frequently made upon this case, I had no doubt, however, of the insensibility extending to the muscles themselves; but in order to ascertain this point experimentally, I requested Mr. Travers, demonstrator of anatomy at Guy's Hospital, when examining the case with me, to introduce a couching needle into the fleshy part of the thumb, having previously had the best surgical authority (with which Mr. Travers agreed) for believing, that such an injury could be inflicted without danger or material inconvenience. A lancet-shaped couching needle was accordingly thrust by him, to the depth of nine sixteenths of an inch, into the ball of the thumb, at the distance of an inch and a quarter from the middle of the dorsum of the metacarpal bone. It touched the

* *In Venerem minime habilis est.*

bone, and must have passed through the mass of short flexors of the thumb. Not the least degree of pain, or even of sensation, was produced by this puncture. The part was desired to be poulticed, and the wound appears to have healed by the first intention; for the poultice was considered by the patient to be quite unnecessary after the second day, and he left London, to embark for the West Indies, at Gravesend, in three or four days afterwards, without having experienced the smallest inconvenience from it. I heard from his friends, before he left the river, where he remained a few days, that he was in his usual health.

Most of the cases of anæsthesia which have been mentioned by authors, have occurred in paralysis; in which complaint the degrees in which motion and sensation are lost, are very various, and do not bear any constant or regular proportion to each other. Where the anæsthesia has been wholly, or nearly complete, it has generally been described as taking place in one side of the body, while loss of the power of motion has occurred in the other. An interesting case of this kind is given in the second volume of the Transactions of this Society.* The principal circumstances relative to it consisted in a weakness and diminution of voluntary power in the left side of the body, attended with a slight degree of numbness in its upper extremity, and a total loss of sensibility in the left side of the head, and in the right side of the body, from the neck downwards. In this case, there were some of the perversions of sensation, which I have mentioned as occurring in the present, particularly as to the feeling produced by cold water, which invariably appeared to be lukewarm.

I have met with two instances very nearly resembling that which I have now laid before the society.† The first occurs in the American Medical Repository, and is communicated in a letter from Dr. Samuel Brown, of Lexington, in Ken-

* History of a case of singular nervous affection, attended with anomalous morbid symptoms. *Medico-Chirurgical Transactions*, vol. II. p. 215.

† These cases I have met with since the paper was read to the Society.

tucky, to Dr. Miller, one of the editors. It is dated June 30, 1799, and is as follows.*

"Mrs. M'L. of Bairdstown, in Kentucky, aged about 40 years, has been deprived, for more than two years, of the power of sensation in her hands and feet. She is quite insensible of the effects of cutting instruments, or of burning coals applied to them. In one instance, when she was employed in shaping a piece of wood with a knife, she incautiously turned her eyes on some other object, and cut off the end of the thumb of her left hand, without perceiving the smallest sense of pain. She cannot, from her sensations, discover the least difference between a hot and a cold iron, and has frequently burnt the skin and flesh to a considerable depth, by mistaking the one for the other. These wounds and burns heal without any uncommon difficulty. Notwithstanding this total loss of sensibility, she retains the power of motion in full perfection, and pursues her domestic employments without any remarkable inconvenience. All her animal and vital functions are in a natural healthful state, and her spirits are regular, nay even cheerful. She feels no inconvenience from her complaint, except a sense of fulness in the veins, which she ascribes to the slow circulation of blood in the extremities. As the sense of touch however is entirely lost, she finds it difficult to retain substances in her hands without looking at them, as it is by sight, chiefly, that she regulates the degree of muscular contraction necessary to their retention. On turning her eyes aside, she often drops glasses, plates, &c. which she holds in safety as long as she looks at them. A variety of remedies had been tried without any effect. I was desirous of witnessing the effects of electricity. Although it produced very considerable contractions in the muscles of her arms, down to her wrists, the effects of it on her hands were scarcely perceptible. After two or three days however, she imagined that she was

* Medical Repository and Review of American Publications on Medicine, Surgery, and the auxiliary branches of Philosophy, vol. IV. p. 225.

sensible of some kind of sensation from strong shocks, and was therefore advised to continue the application of it. Volatile liniment was prescribed, and rollers to support the veins which appeared relaxed and distended by their contents. Of the result of these experiments I have not yet been informed, as my patient lives more than seventy miles distant from Lexington."

The second case is given in a note in the *Philosophie Zoologique* of Lamarck. It is there mentioned, on the authority of M. Hebreard, that a man of 50 years of age, had for 14 years the right arm completely insensible. The limb, nevertheless, preserved its activity, size, and power. On the accidental occurrence of a phlegmon upon it, there were heat, swelling, and redness produced in the part, but no pain, even when it was pressed. During his work, the subject of this case happened to break the bones of his fore-arm, at about a third of their length from the wrist. As he only felt a crash (*craquement*) he thought he had broken the shovel which he held in his hand; but it was sound, and he could only discover his accident by being unable to continue his work. The following day, the arm, at the fractured part, was puffed up; the temperature of the fore-arm and hand was increased, but the patient experienced no degree of pain, even during the extension necessary to reduce the fracture.* In this case, it is clear, that the muscles of the affected arm were equally insensible with those of I. S. And it is probable that this was also the case with the person mentioned by Dr. Brown, though the evidence is not so decisive; as the injury done to the thumb might only have affected the integuments.

The existence of muscular power, and the faculty of directing its exercise by the will, where the nerves have entirely lost that sensibility which is always regarded as necessary to the conveyance of volition from the sensorium, are circum-

* *Philosophie Zoologique*, par J. B. P. A. Lamarck, Tom. 2. p. 262.—I have not been able to find the original case.

stances apparently irreconcilable with any knowledge which we at present possess, of the mechanism by which the will acts in the production of voluntary motion.

A Specific against Gout.

[From the London Monthly Magazine, for July 1814.]

TO THE EDITOR, &c.

SIR,

Two years ago I discovered the composition of a medicine which possesses the power of removing the paroxysm of gout in a degree fully equal to the Eau Medicinale. Since that period, having satisfied myself by various experiments of the identity of the two medicines, I shall now avail myself of your widely-circulating Magazine to communicate to the public an account of this very important preparation.

The value of this information will be sufficiently obvious, when it is recollected that many persons, particularly of the labouring classes of the community, are suffering from that species of gout to which the Eau Medicinale is applicable, who from its high price are unable to obtain it. Independent of this circumstance, its introduction into general practice has been materially impeded by the unwillingness of the profession to countenance a remedy whose preparation remains a secret.

It is foreign to the objects of this paper to investigate the merits or demerits of this principle; but I cannot avoid observing that, as we know nothing of the properties of a remedy, except so far as it produces certain sensible effects on the human body, we are in reality, for all useful purposes, as fully acquainted with the nature and properties of the empirical medicine as with those of the most recognized article in the *Materia Medica*. I do not assume too much when I say that, if the Eau Medicinale had been imported into this country as the juice of a foreign plant, without the usual appen-

dages of quackery, it would have obtained more universal confidence than it has had the fortune to meet with. The profession, who alone are competent to the task, would then have taken more pains than they have hitherto manifested in investigating its real qualities, with a view to ascertain the precise limits of its application.

I shall not, however, dwell upon this part of the subject, as it is my intention less to recommend the medicine, than to point out to those who have experienced its beneficial effects, *a cheap and easy way of preparing it*. However highly I may appreciate its efficacy, when properly administered, I am desirous of avoiding, in a communication not strictly medical, any detail respecting its application, because it is too potent to be trusted generally in the hands of the public. I am acquainted with no substance more unmanageable or more deleterious. I can affirm, from much experience, that, if given in too large a dose, or without attention to the circumstances of the case, its employment may be attended with consequences to the patient of a dangerous nature.*

The first hint which I obtained on this subject was derived from the writings of Alexander of Tralles, a Greek physician of the sixth century, whose book on Gout is one of the most valuable clinical records of antiquity. In his chapter on anodynes, he remarks, that some persons take a medicine called *Dia Hermodactylum*, which produces an evacuation of watery matter from the bowels, attended with such relief from pain that patients are immediately able to walk. *But*, says he, *it has this bad property, that it disposes them who take it to be more frequently attacked with the disease*. He speaks also of its producing nausea and loathing of food, and proceeds to describe the manner of counteracting its bad properties. The effects here described are so similar to those resulting from the exhibition of the Eau Medicinale, that I was led to hope

* In one instance it produced a most alarming transfer of gout from the extremities to the stomach, head, and bowels, which continued a fortnight, and nearly cost the patient his life.

it might be the same medicine, or at least that it possessed powers of the same kind. The *Hermodactyl*, the basis of the composition, was strongly recommended by *Paulus Ægineta* as a specific for gout; and such was its reputation, that we are told by Quincy, it had obtained the significant name of *Anima Articulorum*—the soul of the joints. I was further encouraged to think favourably of this medicine, from its having formed a leading article in the most celebrated gout-specifics of every age. Two of these are, *Turner's* gout powder, and the *Vienna* gout decoction, the latter of which is so strongly recommended by *Behrens*, in the *Ephemerides Naturæ Curiosorum*. It is likewise a fact notorious to every practitioner acquainted with the history of his profession, that this root has, at different periods, obtained considerable celebrity in the treatment of gout, though its general use has, after a time, been suspended; but that the occasional want of confidence in its powers arose less from its inefficacy than its misapplication, experience enables me to affirm.

The *Hermodactyl* of the shops has been considered by most writers on the *Materia Medica*, to be the root of the *Colchicum Illyricum*; but some recorded accounts of the poisonous qualities of the *Colchicum autumnale*, and the manner in which death had been produced by it, induced me to make my first trials with it, and my uniform success has rendered it unnecessary to make any change.

I directed a tincture to be made by infusing, for two or three days, a quantity of the fresh-sliced root of *Colchicum autumnale*, in proof spirits of wine, in the proportion of four ounces of the former to eight of the latter. This tincture I employed in all my first experiments; but, as the efficacious parts of the plant are soluble in water, or wine, either of these menstrua may be used; and to produce a medicine more particularly resembling the *Eau Medicinale* in external circumstances, it is merely necessary to use good Sherry or Lisbon. I purchased the root at *Butler's*, in *Covent-garden*, but it may be procured at all the physical herb shops; and, under the

vulgar name of *Meadow Saffron*, may be found in every part of England.

For medicinal purposes, a recent infusion of the fresh or dried root in water is equally efficacious. I have made extensive trials with this watery infusion, and have never been disappointed in its effects. I was led to employ the dried root, from observing its variable strength when fresh, in which it appears to be much influenced by the weather and the season of the year. After rain, it contains a large quantity of water; but, on the contrary, after much sunny weather, the watery parts of the plant are evaporated, and the active qualities more condensed.

The dose of the tincture, whether it be made with water, wine, or spirit, should be the same, and should vary according to the constitution of the patient. Upon an average, we may fix two drams, or two ordinary tea-spoonfuls, as the proper quantity for an adult.

The wine of white hellebore has been supposed by some to be the French medicine. At a very early period of the promulgation of this opinion, I spared no pains to ascertain how far it was founded in fact. I have employed hellebore in every possible form. In some cases it appeared to be possessed of efficacy; but a series of disappointments induced me to abandon it, as a medicine on which no dependance can be placed. In its mode of operation, it has some properties in common with the *Colchicum*, or *Meadow Saffron*, but in its power of curing gout it falls infinitely short of it.

It is proper to state, that my experiments have already been made in at least FORTY cases, followed by results of the most satisfactory nature, the paroxysms being always removed, and in several instances, no return of disease having taken place after an interval of several months.

JOHN WANT,
Surgeon to the Northern Dispensary, North Crescent,
Bedford square.

ORIGINAL PAPERS.

Singular Obstetric Case.—By Joseph Klapp, M. D.

Philadelphia, May 6, 1815.

RESPECTED SIR,

WITHIN the last few weeks has come under my notice, a most singular obstetric case; thinking it would be interesting to you, I have taken the liberty of transmitting you an account of it. Although the fact, unusual as it certainly is, may have no tendency to cast light upon the operations of the accoucheur, yet I believe you will admit, that it evinces, to a greater extent than any occurrence within your knowledge, the ability of the uterus to perform all its customary offices, when in an unnatural condition, or at least under the influence of a most uncommon incumbrance.

It will also serve to show that dead organic substance, may, when invested by living matter, be preserved from putrefaction, during the lengthy period of many years. May we not thence conclude, that living matter is the most effectual of all antiseptics? What can be its mode of operation? Certainly not by any vascular communication. The human monster, the subject of this communication, was almost entirely deprived of its soft parts; so much so, that on taking a view of the object, its bones are the parts which first strike the eye. Doubtless this bony mass must have at some period been covered with the usual soft parts. How have these parts been removed? Was the body so neatly dissected by the absorbents of the surrounding living parts? Was putrefaction prevented from taking place, in this long residue of a fœtus, in consequence of the air having been excluded from it by the sac in which it was contained? Or would it not be more reasonable to conclude, that the effect was owing to the agency of both the living power, and the exclusion of the air? For my part, in answering these questions, I would not pretend to go further

than to suggest conjecture. The subject rather leads to physiological, than practical reflections, and the difficulty of solving the questions proposed, too clearly bespeak how little we know of many of the actions of life.

Yours affectionately,

JOSEPH KLAPP.

Professor JAMES.

On the 7th of March, 1815, my attention was requested to the case of Mrs. B——, residing in Second near Mary street; on my arrival I found it was supposed that labour had taken place; her pains appeared to favour that opinion, and the patient stated that her period of pregnancy had fully expired, agreeably to her calculation. Without making much further inquiry, I patiently waited for a while to remark the kind of pain with which she was affected; and not being able to convince myself that she was actually in labour, on further questioning, I was informed, that during the preceding few days, she had been afflicted with symptoms of cold, and that last night she was attacked with a diarrhœa accompanied with much pain. I began to suspect that this last might be the only complaint with which she was affected, and finding that the pulse was rather full and active, I directed ten ounces of blood to be taken from the arm, and afterwards to take thirty drops of laudanum. I left her with particular direction to send for me immediately if her indisposition should assume more the appearance of labour. The next morning I again visited her; and found her down stairs; had been relieved by what had been prescribed; rested well during the night; but the complaint of the bowels within the last few hours had returned, for which I directed the following medicine.

R Cretæ ppt.	3vj.
Pulv. G. arabic.	3iij.
Asthamat. elixir	3ss.
Aquæ menth. pip.	3j.

Sacchar. alb. ʒss.
Aqua. font. ʒv.
M. ft. julep.

Of which she was requested to take two large table spoonsful every three hours, with six drops of laudanum in each dose, until relieved. At ten o'clock in the evening an immediate attendance was requested, when I found her in pretty severe labour, and was assured by the women present that she had been affected with sharp pain for several hours. On examination, per vaginam, it was perceived that the membranes had given way, and the os uteri had considerably dilated; and I found, on extending my finger in different directions with a view to discover the state of my patient, it was arrested in the posterior part of the pelvis by a hard, and somewhat round body, which, as near as I could ascertain, was situated about the brim of the pelvis, and resting directly on the sacrum. Notwithstanding the most minute examination I could not inform myself what was the nature of this substance. In size, figure, and hardness, it appeared to be very unlike any presentation which could arise from an ordinary fœtus. Its sides, or lateral parts, were so compressed as to form somewhat of a sharp edge, and excepting this particular, its general form seemed similar to that of the head of a fœtus; but I was led to believe that it could not be that part which was felt, on account of its uncommon hardness; for a mass of solid bone itself could not have given that sensation more fully; and further, its size was opposed to that idea, it not appearing to be more than four or five inches in circumference. On passing my finger over the anterior surface of this singular protuberance, I found, after passing apparently the distance of three or four inches, it suddenly diminished in size, so as to form something analogous to the neck; and when I endeavoured to extend the search farther up the uterus, my finger lodged in a confused mass of bones of different sizes, and a softer substance which felt as if it might be membrane, muscle, &c., but of their precise nature I could only conjecture. In the

next place I endeavoured to investigate the opposite surface of this body, or that part of it which was turned to the posterior part of the pelvis; but in this I was disappointed, for what I conceived to be the neck of the object, was very closely embraced by something which felt as if it might be a *sac*, which arrested the further progress of my finger in this direction. After full half an hour's most attentive examination of this very anomalous body, I reluctantly gave up all hope of being able to discover what it was; accordingly I removed my finger from it into the most anterior part of the pelvis, where I soon met with a second presentation jutting over the symphysis pubis, which I easily recognized as the head of a common fœtus. Not being able to find out the precise description of this singular case, I concluded, under all circumstances, it would not be advisable for me to make use of much exertion to expedite delivery. Accordingly, I waited between three or four hours in hopes that she might possibly relieve herself by her own efforts, during which time I made no further interference than to make an occasional examination, per vaginam, to observe what changes might take place. The pains returned regularly every few minutes, and were of considerable duration; notwithstanding, I soon was furnished with too much reason to fear, from the unlucky course which the labour was taking, that the expulsive efforts of the uterus, no matter how regularly and forcibly made, must in all probability prove incompetent to the wished for relief. I found, from repeated examinations, that the pains, instead of lessening, greatly increased the amount of the obstacle, in consequence of their operating equally, and at the same time, upon both presenting bodies, tending thereby to bring them down together through the pelvis, whose capacity could not possibly admit of her being delivered in this way. A sense of duty required that I should no longer be an inactive spectator, but the very alarming condition which my patient appeared to be in, demanded that the best active aid should be given to her which the uncertain nature of the case would admit of. The

anomalous body which had imposed on the case so much obscurity and difficulty, being the farthest down in the pelvis, I grasped it firmly with my fingers, and at first endeavoured to withdraw it by pulling it, at each return of pain, gradually increasing my efforts, until carried to as great an extent as was supposed prudent to risk. After several pains had been employed in this way I discovered that but little was accomplished by this method; for the part, on some account which I could not then explain, constantly receded during the intervals of the pains, nearly to as great a degree as it had been previously protruded. Observing, that the second body presenting, lay directly above, and on the other, that it appeared to be much affected by the pains, so much so as to be brought down directly upon it, I conceived that if the larger body could be pushed back a little, that which lay before it, and prevented it from passing through the pelvis, might also be pushed upwards, and out of the way, so as to admit of the former to be brought down; and that possibly in this way delivery might be effected. Accordingly this second plan was put to trial, but with no better success than the first, the anomalous body appearing to be so firmly fixed that it could not be dislodged from its situation. Having thus failed in both of these attempts, several pains were permitted to follow without receiving any assistance or interference from me, partly on account of my being sensible at this time of great fatigue; but chiefly, because I confess I was for a little time at a loss to know what to do in this perplexing case. On renewing the examination, *per vaginam*, I found the presenting parts had again descended to their former station. Thus circumstanced I knew very well the woman could never be relieved without further aid from art; at this period too my fears for her safety had considerably increased in consequence of the occurrence of fainty fits and flooding; a third attempt was therefore resolved on, in which I thought myself justifiable to risk more force, and to make a greater exertion than I had previously ventured to do. I introduced my finger along the anterior

surface of the first presenting part, and succeeded in obtaining entrance to what I supposed to be a *sac*; along this course my finger was pushed upwards to the extent of several inches; then, by taking a different direction, I fortunately succeeded in getting completely around the *object*, so that I had it firmly hooked within my finger. Having at length obtained a strong hold of this *troublesome uterine curiosity*, I waited for a return of pain, with which I was soon favoured, when I pulled with much force, and almost directly it escaped from its confinement, and the woman very luckily got clear of it. This difficulty having been removed, the body still remaining in the uterus met with no obstacle to its passage through the pelvis; and by three or four pains, with little or no aid from me, she was finally delivered of a full grown, but dead fœtus. The placenta was expelled in fifteen minutes afterwards. There was very little flooding at this time, but the woman seemed exhausted and fainty; I therefore directed a small quantity of cordial drink to be given her. In a short time her strength and spirits seemed much recruited. When the necessary directions had been given, I entrusted her to the care of the nurse. My curiosity being greatly excited by what had taken place, I could not any longer refrain from making an examination of the singular *object*, which I had just extracted from the uterus with so much difficulty to myself, and I may add with so much suffering to my patient. To my great astonishment, on opening the cloth in which it had been wrapped, I found that it was a fœtus, but in a highly unusual state. This I took the liberty of taking home with me, and which in the sequel of this letter shall be minutely described.

March 9.—She complains of pains in different parts of the body, and a general sense of soreness. Has some fever, and diarrhœa is violent. Directed the combination of chalk mixture and laudanum to be continued.

March 10.—Complaint of the bowels has been very troublesome; says she had a dozen passages through the night. Has voided urine this morning, and the hypogastric region which

had been previously swelled has become more as usual. This day for the first, her stools are involuntary, the sphincter ani seems to have entirely ceased to perform its office. She is very thirsty; tongue is covered with a white fur; skin is dry, and pulse 64 in a minute, and somewhat tense. Lochial discharge such as she has been accustomed to in her former confinements. Apprehensive of inflammation, I directed a blister plaster to be applied over the lower part of the abdomen; eight ounces of blood to be taken from the arm, and to give the following for the diarrhœa.

R Pulv. ipecacuanhæ, gr. xv.

Gum. opii. gr. iij.

Syrup. simplic. q. s. ft. pil. xij.

Two of the pills to be taken every three hours. Barley water for common drink.

March 11.—Urinè discharged freely last night. Bowel complaint continues, but not so severe. Has had some violent attacks of colicky pains. Blister had not risen sufficiently this morning, and plaster was replaced. Passages continue involuntary; lochial discharge continues; pulse about as yesterday; sweat some during the night; tongue still furred. On the whole she thinks, judging from her feelings, that she is better. Blood taken yesterday is both sily and capped; the coagulum is dense and the coagulating lymph is very strong. Pills to be continued; administer a glyster of linseed tea, and a few drops of laudanum; though it may not be retained, some good may arise from its impression on the internal surface of the rectum. Eight ounces of blood more to be lost, and to carefully restrict to very light food and drinks.

March 12.—Diarrhœa has abated, less pain, and passages not so frequent, continuing however involuntary. Has less fever—pulse about 60 in a minute, and very small. Her countenance is very pale, and says she feels very weak. Blood taken yesterday not so sily. Ordered the ipecacuanha and opium pills to be continued, and to give a half tea-cupful of the infusion of logwood four or five times in twenty-four

hours. Barley water to be used occasionally for drink, and to use for aliment a pap of starch and milk.

March 13.—Fever very slight; pulse not more than sixty, and regular. The tongue looks better; diarrhœa not so frequent. The sphincter ani is resuming its office. Directed a glyster of starch and laudanum to be given; continue pills and the same nourishment.

March 14.—On my entering the room this day, my patient with a smile accosted me with "doctor I am well to day." Bowel complaint is now very trifling, had only two stools through the night, and two to-day. Sphincter ani now performs its office perfectly. Pulse, skin and tongue, correspond with the improvement in other respects. All swelling in the abdomen has subsided, and she is fully sensible of the change produced in the region of the uterus by the extraction of the unusual fetus—lochia lessening. Continue pills, logwood and starch pap.

March 15.—Much better; has been able to sit up a short period to-day. Had one stool in the night, and three to-day. Has a good appetite, and is becoming stronger. Directed the medicine of yesterday to be continued.

March 16.—Rested well last night, but has had a considerable return of the bowel complaint to-day. Free from fever; and excepting the diarrhœa, she seems in every respect improving. Continue medicine.

March 17.—Bowels are now nearly in a natural state; has had but one stool to-day, and evidently getting well.

March 19.—Continues better; has had two passages to-day, and is becoming stronger.

March 21.—Diarrhœa has entirely disappeared; and, excepting debility, the common attendant on the lying-in state, my patient appears to be quite well. Desist from the further use of medicine.

Relative to the circumstances which led to this extraordinary birth, I have not only been informed by the patient herself, but have also been favoured with an interesting detail of

facts from Dr. Caldwell, one of the physicians who attended her after she was taken ill, with a uterine hæmorrhage, at about the seventh month of what she supposed to be a pregnant state.* The flooding continued more or less nearly six weeks, when pain supervening, supposed to be that of labour, the assistance of Mrs. Morrell, a midwife, was requested. The old lady not being able to satisfy herself with respect to the actual situation of her patient, solicited the aid of a physician. The result of a further investigation of her case, was a belief, that she in all probability was not pregnant. Under this impression medicine was resorted to, the principal of which she supposed to be mercury, and after the lapse of some time she in a great measure recovered her health. After the abdominal swelling which the patient had imputed to pregnancy had subsided, while on the use of medicine, she very plainly discovered a very hard tumour in the region of the uterus, which, by assuming different positions of the body, would move from one side to the other. This tumour never occasioned much uneasiness, excepting when a sudden motion would be given to it, or at the times of her being pregnant, and then it would sometimes give her slight pain. She continued to carry this singular enlargement the period of about eleven years, during which time she enjoyed an ordinary proportion of good health, and became the mother of six children. In the last of these six births I extracted from the uterus this tumour, which proved to be the remarkable fœtus before alluded to. I now beg leave to introduce Dr. Caldwell's letter.

"Dr. Caldwell has a perfect recollection of the case of Mrs. B——, to which Dr. Klapp has reference in his note of this morning. It occurred, he thinks, in the year 1804. That lady having previously had several children, supposed herself again in a state of pregnancy, accompanied however with several

* It will be observed that this statement does not appear in Dr. Caldwell's letter, as well as a few other circumstances alleged by the patient, which must be attributed to the difficulty of retaining in the memory events which had occurred so many years ago.

unusual and unpleasant symptoms, which did not fail to excite in her mind considerable apprehension. At the request of Dr. C. she engaged the late Dr. Church to be with her at the time of her confinement.

"Some time in the spring, perhaps in the month of March, of 1804, labour pains came on, and continued with considerable severity for two or three days.

"There being no appearance of delivery, and Dr. Church becoming uneasy, and somewhat doubtful as to the issue, requested Dr. C. to attend with him in consultation. The pains were now evidently on the decline, and in a few days afterwards, without producing any birth, or as far as Dr. C. now recollects, any unusual discharge of fluids, went off entirely.

"The abdominal enlargement still continuing, and Dr. C. suspecting the case to be dropsical, recommended the use of calomel and digitalis. He thinks, but is not certain, that he pushed the remedy to the extent of ptyalism. In a few weeks the tumour disappeared, if not entirely, at least so far as not to be perceptible to common observation, but many months elapsed before the perfect re-establishment of the patient's health. At length however all complaints ceased, certainly none were spoken of, and in the course of the following year Mrs. B. was delivered of a healthy and vigorous child. Dr. C. thinks she had one or two more children during his attendance in the family, which terminated perhaps in the beginning of the year 1808. Subsequently to her *false confinement* in 1804, Mrs. B. menstruated regularly when not pregnant, and enjoyed, as far as Dr. C. recollects, tolerable health.

"Touching the case in question, the foregoing is the amount of all that Dr. C. is able to communicate. He is sorry it is not better calculated to shed light on the subject, and to subserve the inquiry which Dr. K. may have in view.

"*March 16, 1815.*"

A description of this singular fœtus.

Its colour is a light red, it is very destitute of all the exter-

nal soft parts of the body, excepting an indistinct appearance of muscle on the lower extremities; all the rest of the exterior of the body consists of bones covered with a fine, transparent membrane. The greater part of the bones are of the usual form, yet many of them are thrown into unusual situations. The *object* viewed as a whole exhibits a figure extremely irregular, in short it is a shapeless mass of bony matter. The head and inferior extremities are somewhat bent towards each other, in consequence of which its back at, and just below the scapulæ, is formed into a considerable convexity. There is no sternum: at the place where it should be there exists a depression, within which may be perceived a quantity of soft substance apparently consisting of viscera; on each side of this depression are placed the anterior terminations of the ribs; these are destitute of cartilages, but are successively arranged aside of each other in the natural order, eight or ten of which can be easily pointed out. The left scapula has the usual form, the right is indistinct, neither of which are in their proper places. The os humeri of the right side passes down over the ribs in a direct line from the glenoid cavity of the scapula, to the hip joint, and the bones of the corresponding fore-arm are reflected upwards from the elbow joint along the humerus to the extent of their length, so that the joints of the wrist and shoulder are nearly in contact with each other. No appearance of a hand can be found on either side, but something similar to five metacarpal bones are attached to the cubitus of the right side. The head is turned round to the left, so that the face is nearly on a line with the left scapula. The left upper extremity is differently disposed of from the right; the bones of the fore-arm are bent back on the humerus, similar to what is observed in the other extremity; but instead of hanging down over the side as the other does, it is thrown immediately forward, so as to run nearly in a direct line from the shoulder joint to the spot where the upper end of the sternum should have been. By this arrangement the right side of the head and face rests on the left upper extremity, so that

the chin is attached to the shoulder joint of this side. The general figure of the head is nearly natural. The frontal, parietal and occipital bones, are easily distinguished; also the sagittal, coronal and lamdoidal sutures. The temporal bones are entirely wanting. Something similar to an ear can be distinguished on the left side, but no trace of an ear can be discovered on the other side. The different parts of the face are not very obvious at first sight, but by a little attentive inspection nearly all of them can be recognized. The cavity of the head appears as if it might be occupied by something similar to brain. No trace of an umbilical cord can be detected. The lower extremities are bent in a way similar to the upper ones, the bones of the leg pass up along the back part of the femoris, so that the ancle and hip joints are nearly in contact with each other. The thigh bones are somewhat covered with a soft substance resembling muscle. The feet are absent. The greatest circumference of the head is eight inches. From the top of the head to the ancle joint is eleven inches and a half. The weight of the *object* is eight ounces and a half.

TO THE EDITORS OF THE ECLECTIC REPERTORY,

GENTLEMEN,

THE following communication, which I send you for the Eclectic Repertory, on a disease too much neglected by preceding practical writers in medicine, will, I hope, receive that attention, which one, so formidable in its aspect, and so fatal in its consequences, necessarily demands.

On Mania à Potú.

BY ISAAC CLARKSON SNOWDEN, M. D.

From the familiarity which my late residence in the Medical Department of the Philadelphia Alms-House, has furnished me with this disease, I shall endeavour to present, from

personal observation solely, a concise view of the cause, a correct delineation of the characters, and the most successful method of treating the disease in question.

In the animal system, there is known to exist a principle, denominated variously, principle of vitality—excitability—vibratility, &c. &c. according to the opinions of different theorists. Rejecting all specious display of hypothesis, and strictly adhering in this, as I shall throughout the communication, to fact, and the most obvious inductions, I merely state, that this principle, in whatever it may consist, or whatever name it may assume, may be diminished, augmented, impaired, destroyed. The first effect produced by ardent spirits on the animal system, is an universal and preternatural excitement. When the excitement is urged to a high degree, the functions of the brain, and of most of the systems, become impaired. Nor does this elevated condition of the system continue long; for, by a rapid decrement the excitement falls, not to its original level, but far below the natural, healthy standard. When the practice of drinking spirituous liquors to excess has been long pursued, the vital principle, or, (to use a more general expression) the system, which, for a certain period, was able to resist in some degree the force of such a stimulus, loses, by being so frequently and so powerfully operated on, (when the cause itself ceases to act) the power of rising from the state of depression into which it was thrown. This I consider to be the state of the system in *Mania à Potû*.

The SYMPTOMS which attend this disease are the following. I will sketch them as nearly as possible in the order in which I have usually observed them to approach. The countenance becomes dejected; the eyes are red and furious, never fixed, but incessantly wandering from object to object; the tongue is dry and hard; the skin, though occasionally dry, is more frequently *moist*; the bowels are almost always costive the stomach much disordered and affected with frequent vomiting. The patient complains of violent pain in every part of his head; he is unable to retain aliment of any kind; and even

fluids which he craves are almost always ejected immediately when drank, or in a few minutes afterward, with the exception of spirituous drinks, provided they are taken in very small quantity at a time. A trembling seizes on every muscle, so that he is incessantly in motion; his knees strike against each other and he frequently falls. He is, however, occasionally (though but for a few minutes at a time) possessed of most surprising strength, so that it sometimes becomes necessary to obtain the assistance of several persons to confine him. After these paroxysms of strength are over, he becomes suddenly debilitated in the extreme, and falls like a mass of lead: immediately after which he is *sometimes* seized with the strongest convulsions, in which state he continues for many minutes. All his motions are marked by a singular impetuosity; he hurries his hands over every part of his body, rubs his face and head with peculiar violence, seems to imagine every thing around him out of its proper place, and is incessantly picking at some imaginary thing that incommodes him: he pulls his bed-clothes, throws his bed about the room, and moves his bedstead continually from place to place. But his mind exhibits a still more distressing and horrible picture. He intreats not to be left alone, points to men and devils armed with daggers and other weapons, whom he expects every moment to see commencing his destruction. He is in horror of ten thousand evils, and will endure no contradiction, no refusal of compliance with his demands!

These are the symptoms which accompany this frightful disorder; from which, unless the patient be very speedily relieved by a judicious treatment, he will most inevitably sink beneath an accumulated load of the severest bodily and mental sufferings.

TREATMENT. Happy would it be for afflicted humanity, were we able to speak with the same degree of assurance of the probable result of the treatment of every other disease, which I am persuaded might be expressed of a correct and judicious treatment of *Mania à Potû*.

At the commencement of the attack, when the disease has not yet assumed a formidable appearance, frequently no more is necessary than to pursue the following plan:—

R Tinct. opii. gtts. lxx. vel lxxx.

Ess. pip. menth. ʒss.

Bis in primis quatuor horis.

Porter should be frequently administered; or, which is often more effectual in the commencement of the cure, from half a pint to a pint of spirits, according to circumstances, in the course of the day. Opiates should be continued daily at regular intervals, and in moderate quantity, as follows:—

R Tinct. opii. camph. gtts. lx.	} Secundâ vel tertiâ quâque horâ.
Tinct. assafœt. ʒss.	
Ess. pip. menth. ʒss.	

Or: R Gum. opii. gr. ij. vel. gr. iij. ter die.

The bowels should be particularly attended to. If they are costive, which is usually the case, an enema would be the best mean of evacuating them. The following common one is suitable and conveniently procured:—

R Muriat. sod. ʒiij. vel ʒiv.	} Let it stand until it is at a proper temperature.
Ol. ricin. ʒj.	
Aq. bullient. ʒss.	

It is necessary, however, sometimes to use laxatives, and even cathartics internally: prudence would require the administration of the latter in divided doses, on account of the increased debility which would supervene a too copious depletion from the bowels.

Their diet, as soon as they are able to take nourishment, should be nutritious and strong. Soups made from beef and fowl, and well seasoned with spices, are very palatable and proper. Hot chamomile tea, hot coffee, and rice, they are generally fond of.

But frequently we do not see a patient with this disease until more violent and alarming symptoms have supervened. It then behoves the physician to employ a more energetic practice. In such cases, I might almost say, that *sleep induced by opium* is the only remedy.

R Gum. opii. gr. iv. vel gr. v. every two hours until the patient sleeps.

Until sleep is procured, scarcely any thing can be advantageously done. Nevertheless, if the pain in his head be extremely violent, and continues long, it may sometimes, *very seldom* however, be necessary to take a few ounces of blood. The pulse is here an important, an indispensable guide: for though it may be *full, frequent*, and to a hasty examiner *apparently* strong and tense, he will find it almost *always soft*, and obliterated by very slight pressure. Should he bleed under these circumstances, the hopes of recovering his patient will be much diminished; and he may think himself happy if he does not see him expire in a convulsive paroxysm before he has time to secure the arm. But the patient will be best, and in the safest manner, relieved by enemata or cathartics, and sometimes it becomes necessary to employ both. Cups to the temples and back of the neck, and a blister to the head, are often employed with considerable benefit in cases where we have reason to anticipate serous or sanguineous effusion on the brain. In some instances of this kind, where the pulse was actually *hard* and *tense*, I have performed arteriotomy with peculiar benefit to the patient. But this is seldom called for. In many of the cases which I have seen, being with them through the day, and often during parts of a night, it has been prudent, and even absolutely necessary, before any thing could be administered, to confine the patient by means of a straight-waistcoat. When this is done, he almost always becomes more calm, and can more easily be persuaded to take what may be prescribed. He frequently fears that there is poison in the cup from which he takes his drink, &c.; and it is best sometimes to humour him by throwing out the contents, and presenting him some which is fresh.

I have almost invariably observed that patients with this disease are remarkably attached to their physician, and will take any thing from his hands, which they would refuse from their attendants, and even friends. The mildest language, and

the kindest manner should be employed towards these unhappy beings; and I believe, that in far the greater number of cases, it is the only method by which they can be managed: except in two instances, out of nearly a hundred, I have not been under the necessity of using authoritative or harsh language.

When the patient has awaked from his *opiate* sleep, he should be allowed to drink pretty freely of brandy or spirits. Sometimes, but very seldom however, it has been necessary to give it to the extent of one pint and a half daily, for three or four days in succession; but generally one pint a day, and sometimes half a pint daily, is sufficient. It is almost indispensably necessary that he should be allowed the use of these liquors; in fact, they are an important part of the *curative* treatment. Without them the system would sink to an extreme degree of prostration, to raise it from which it would become necessary to have recourse to those very measures, the neglect of which has involved it in a condition almost, probably absolutely, irrecoverable.* If after waking, he seems disposed to become furious again, give the opium in the quantity before mentioned, viz. gr. iv. or gr. v. every two hours until sleep is again induced; and if, after waking again, the frenzy should recur, again resort to the administration of the opium.

For several days successively, he should now take one or other of the following mixtures, or something similar to them. They are the formulæ generally used by the physicians of the Alms-house.

R Gum. assafæt. ʒij. tere in mortario cum

Aq. menth. ʒvj.

Tinc. opii. ʒij.

Capiat æger cochleare magnum secundâ quâque horâ.

* The use of these liquors should be continued for several days, as long as the symptoms appear to demand it: it is, however, of importance to diminish the quantity gradually every day.

When the symptoms indicate a greater degree of prostration, the following preparations are demanded:

R Carb. ammon.	℥ij.	} Cochleare magnum secundâ quâque horâ.
Pulv. gum. arab.	℥iij.	
Tinc. opii.	℥j. vel ℥ij.	
Tinc. lavend. comp.	℥iij.	
Aq.	℥viiij.	

Of the following mixture give a table spoonful every half hour, or hour.

R Carb. ammon.	℥j.
Tinct. opii.	gtts. lx.
Sac. alb.	℥ij.
Pulv. gum. arab.	℥j.
Aq.	℥vj.

This treatment, together with the diet mentioned above, should be continued, with very little variation; modified, however, according to the variation of the symptoms, until the cure is effected, which generally takes place in the course of one, two, or three weeks.

* *The dissections* which I have made of the brain, &c. of persons whom I have seen die of the most furious and unconquerable Mania à Potû, confirm the common remark, that when effusion does take place, it is more generally of the serous than of the sanguineous kind; but I believe that far the greater number of cases exhibit proof neither of sanguineous nor serous effusion. Three brains were highly florid, but there was no extravasation of blood: there was some serum between the dura and pia mater in one of these cases, and a preternatural quantity in the lateral ventricles of the others. I am informed by a friend who resided at the same institution, that he has, in two instances, found, between the dura mater and cranium, half an ounce of blood mixed with serum. Several

* Patients, and particularly those afflicted with this disease, are often brought into the Alms-house in the last moments of life, and when it is impossible to hope a favourable result from the most judicious treatment. They have been known to expire while the attendants have been conveying them into a ward, or in a few minutes after having been placed in bed.

brains did not exhibit any mark of disease whatever. The stomach in two instances was florid, and appeared to have been highly inflamed. Nothing peculiar struck me in the examination of the intestines, except that the colon was considerably contracted in a few instances. The liver almost always exhibited, more or less, a preternatural appearance. In two subjects who had experienced repeated attacks of this disease, on making an incision into the posterior part of the right lobe of the liver, my knife was followed, in one, by a *pint*, in the other by nearly a *quart* of sanious pus.

The pericardium was usually distended by a preternatural quantity of fluid.

ORIGINAL REVIEW.

A Dissertation on the Influence of a Change of Climate in Curing Diseases; by Professor GREGORY, of Edinburgh. Translated from the original Latin, and enlarged with occasional Notes: by WILLIAM P. C. BARTON, M. D.—
 “Pessimum ægro est cælum quod ægrum fecit; adeo ut in id quoque genus, quod natura pejus est, in hoc statu, salubris mutatio sit.” Celsus de Re Medica. Philadelphia: published by Thomas Dobson, 1815: 1 vol. 8vo. pp. 212.

AN analysis of this work will be, we presume, more acceptable, if we present occasional extracts, exhibiting the views of the author, on a subject so interesting to the profession as the influence of a change of climate in curing diseases. By this plan too, our readers will be enabled, independent of any prepossessions of our own, to form a more correct estimate of the real merits of the work, and of the claims which the English version has to public patronage.

The work is divided into sections. The first section contains general observations relative to the effects of climate on the human constitution, and especially respecting the effect of that of Great Britain on the inhabitants—Remarks on the constitution of the air; and its *modus operandi* on the solids and fluids of the body; also of the disorders induced by its inclemency, and the sudden vicissitudes to which it is liable,—of the effects of sailing on the system, and the peculiar kind of nausea, vomiting and exercise, arising from it. Observations tending to prove, that a change of climate may reasonably be expected to cure many obstinate chronic diseases, and more especially those endemical to the inhabitants of Great Britain.

Though placed several degrees to the south of Great Britain, we can not fail to perceive, that many of the observations

which more peculiarly apply to that island, are applicable to the portion of the globe we inhabit. We are familiar with the impressions made on our systems by the sudden vicissitudes of a variable climate. Great transitions from heat to cold are observable throughout the United States, and notwithstanding the more prevailing dryness and purity of our atmosphere, many of our diseases are considered as dependant on the cold and wet, which frequently occur during the seasons of winter and spring.

Dr. Gregory explains the operation of cold, as constricting the vessels and pores of the skin, while excessive moisture he considers as relaxing the muscular fibres, weakening the contractile powers of the heart, and diminishing the action of the arteries. Hence the diminished perspiration and the supposed regurgitation of the blood on the internal parts, occasioning inflammation, hæmorrhage, fevers and a great many other disorders. Still there is a power inherent in the living body by which it is enabled to ward off the danger. "Thus it is, (he says,) that the human constitution, provided indeed it be vigorous and sound, accommodates itself so surprisingly to all variations of climate, from the coldest to the temperate, and the more fervid; that for the most part it suffers no injury from their diverse temperatures.* Cold and moist air, such as prevails in Great Britain, is the least favourable to perspiration, and an equable distribution of the fluids; but nature has so amply provided for that inconvenience, that the natural circulation of the fluids, in so far as is essential to health, is sufficiently promoted: consequently, those who are blest with sound and robust constitutions, suffer little or no detriment from this cause. Yet we see, notwithstanding, many instances, in which the healthiest temperament affords no barrier to the

* "Perhaps no climate or country is unhealthy, where men acquire from experience, or tradition, the arts of accommodating themselves to it. The history of all the nations of the world, whether savage, barbarous, or civilized, previous to a mixture of their manners by an intercourse with strangers, seems to favour this opinion."—*Rush on the Climate of Pennsylvania*.

hurtful incursions of the climate of this country. It is probable, that there are critical and dangerous periods in some constitutions, and without doubt there are idiosyncracies arising from peculiarities in the manner of living, as well as from the various conditions of men, and from other causes not accurately investigated, which render persons, who are in other respects perfectly vigorous, liable to diseases incidental to climate. It should be remarked, however, that although the irregular and unseasonable variations of the weather, do certainly exert most powerful effects on the constitution, and tend to produce many serious disorders; yet it happens, not unfrequently, that evils are imputed to the influence of climate, which in fact it has but little agency in generating; and which really derive their origin altogether from other sources. For in every clime, however variable and insalubrious it may be, we find inhabitants enjoying perfect health; and no portion of the terraqueous globe gives birth to any race of beings, that are liable to be annihilated by the destructive effects of the climate they inhabit. It has not either ever been observed that other animals are injured by the influence of their native clime, however insalubrious and intemperate it may be, and even under circumstances of the greatest possible exposure to the power of its severity. We surely cannot doubt then, that men may be able to endure the irregular transitions of climate without either injury or danger, provided they live temperately. Nor can we for a moment believe, as we should by admitting a contrary position to be true, that the Creator and preserver of the human race would subject mankind to a condition so rigorous and unjust. Besides, those men who are accustomed to a rude, and laborious life, who are but little regardful of the unseasonableness of the weather, to the vicissitudes of which they are continually exposing themselves, certainly live in the enjoyment of health and vigour like other animals; nor was it till he discovered and brought to perfection, artificial means of defending the body generally, from the extremities of the seasons, that man was subdued by the

severity of his native clime. Those, therefore, who are unskilled in the means of avoiding or guarding against the extremities of weather, seldom suffer any inconvenience from it; and it is only in proportion as men become afraid of exposing themselves to the intemperance of the air, and sedulously endeavour to avoid it—that they are rendered very susceptible of its effects. There is certainly but one method, by which men are enabled to defend themselves against the rigour of an unhealthy climate; namely, by rendering their constitutions so vigorous and robust, that they are in a situation to encounter and endure the danger and inconvenience they cannot shun. It is not surprising therefore, that those who are accustomed to polished life, and to indulgence in various luxuries, should be solicitous to elude the rigorous excesses of the weather. For if, from the causes we have mentioned, we find that men, in other respects very robust, and in the full enjoyment of perfect health, can scarcely endure this severity without annoyance; how much danger is not to be dreaded for those who have inherited from nature, less healthy constitutions—who, from living intemperately, or otherwise unhealthfully, have rendered their systems subject to various disorders—who from ill health, or from whatever cause, are broken down and exhausted in strength—or finally, for those advanced in years, or continually inclined to depression of spirits, and in whom all the natural powers of the mind and the body are wasting away by degrees!

“It is in cases then of this nature, that we should seek another climate blest with the cheering aspect of a clear and serene sky, assisted in its happy effect upon the feelings by the genial influence of soft breathing zephyrs. Where the prevalence of pleasant and more agreeable manners and livelier scenes are calculated to soothe the feelings, to promote cheerfulness, and to revive the declining powers of nature.”

When it is judged expedient to make trial of a change of climate, with a view to its effects as a remedy, the question naturally arises, whether the patient should travel by sea or

by land? For a solution of this question we beg leave to refer to the work before us, as we should greatly exceed our limits if we accompanied the author through the details incidental to this part of his enquiry.

The second section treats of the nature and symptoms of pulmonary consumption, and its similarity or identity with scrofula; of the different opinions of physicians respecting the curable or incurable nature of phthisis pulmonalis; of the effects of wounds and other injuries of the lungs; of the remote and proximate causes of consumption, and the reasons that may be deduced from them, in favour of a change of climate upon the disease; of the curative effects of travelling, riding on horseback, and sea voyages.

Great as is the devastation produced by consumption in Great Britain, in these states our liveliest emotions are likewise exerted by the numbers who are the annual victims to this inexorable disease. According to the London bills of mortality, one fourth of the deaths may be ascribed to consumption. This is pretty nearly the proportion as stated by Sydenham. Of the deaths which occurred in Philadelphia during the year 1814, nearly one sixth* appear to have been occasioned by phthisis pulmonalis.

According to the description in the volume before us—
 “Pulmonary consumption may be known, for the most part, by the following symptoms: a slow emaciation of the whole body, accompanied with hectic fever; a sense of weight or constriction, or pain, in the breast, with difficulty of breathing; a frequent and troublesome cough; which in the beginning is dry, but after the disease has progressed, generally accompanied with purulent spitting. The symptoms which denote incipient consumption, vary according to the causes which produce it, as for instance, pleurisy, catarrh, hæmoptysis, &c.

* If we take the reported deaths of phthisis pulmonalis, from ten to fifty years of age, only, the deaths of this year will be nearly one ninth.—
 EDITORS.

The proximate cause of this disease is well known. Dissections of the bodies of persons who have died of consumption have almost always exhibited tubercles, vomicas and ulcerations of the lungs; by which sometimes nearly the whole of that viscus is consumed. I say that these morbid phænomena will *almost* always occur, for I would not venture to assert that they will *always* be found. There are many physicians of no little reputation, who strenuously contend, that sometimes neither an ulcer nor any other visible injury is to be discovered in the lungs of those who have had copious purulent spitting, and other symptoms of consumption, and who had evidently died of this disease. It is agreed on all hands however, that instances of this kind are very rare, while it is generally allowed that true consumption arises from an ulcer, or rather ulcers in the lungs. The dissections indeed of dead bodies satisfactorily demonstrate, that not only a single ulcer or tubercle, but sometimes congregations of them had produced the disease, and that these had become inflamed and had suppurated. The proximate cause therefore being known, the curative indication would seem to consist in dissipating the tubercles, or if they shall have already passed into suppuration, to heal the ulceration in the first place. This effect, however, is to be accomplished by the healing powers of nature, and not by the assistance of physicians; and I must confess, that, in this stage of the disease, I see nothing which justifies the expectation of any benefit being likely to result from a change of climate. If the general habit of body is sound, ulcers in any other part are usually healed with facility by the mere efforts of nature; and in such cases physicians might easily retard, though they could scarcely promote, the cure. For I do not know any remedies which, by any specific power, can produce that healing process. It is well known, that many remedies which have been administered with that intention, have had altogether a contrary effect, and not only did not do any good, but often proved very injurious,—such as natural and artificial balsams: and these are now rarely employed.”

The nature of the disease and its relation to scrofula, are more fully expressed in the following paragraph. "All physicians know that this complaint very frequently arises from a scrofulous disposition. The illustrious Mead advanced that opinion many years ago. Indeed, we owe to Sydenham a memorable remark, which seems to have suggested this; namely, that in some consumptive persons, who have been cured by riding on horseback, glandular tumours in the neck, which bore a strong resemblance to scrofulous swellings, have been observed after that disease had left them. No doubt, however, remains on this subject among physicians of the present day. Observations have satisfactorily ascertained the fact, that persons of scrofulous habit are more subject to consumption than others, and that the greatest part of consumptive people evidently have this disposition. There are some physicians too, of no little reputation, who, out of every hundred patients carried off by consumption, reckon the proportion of ninety at least, to be scrofulous. Besides, there is certainly a great similarity and affinity between the tubercles and consumptive ulcers of the lungs, and scrofulous tumours and abscesses in other parts of the body. They also have the same external, and, if they be cut by the knife, the same internal appearance; the same thickness and hardness. In the same way they often increase by degrees from a small beginning to a large tumour, and generally without much pain or inconvenience; they suppurate tardily and with difficulty, and never pass into a healthy suppuration, but are resolved into offensive and almost incurable ulcers. Both appear at the same seasons of the year, that is, in winter and the spring; upon the approach of summer they are mitigated or discussed; and on the return of spring both often reappear. And lastly, in dissecting the dead bodies of those who evidently died of scrofula, scrofulous tumours in all parts of the bodies, and tubercles in the lungs of the same kind, have not unfrequently been found; this it has happened to me to see twice or thrice.

From all these things it is sufficiently evident, that consumption of the lungs often arises from a scrofulous disposition, and that it is a true scrofulous disease. Wherefore, when consumption occurs in those, who are either manifestly scrofulous themselves, or born of scrofulous parents, it is generally to be attributed to this cause."

The third section treats of the causes of hypochondria, especially its origin from the effects of climate, diet, or mode of life. Its various symptoms. Its connexion with hæmorrhoidal flux and its affinity to this disease, deduced from the similarity of its causes. The general absence of any preternatural appearances in the dissection of the dead bodies of hypochondriacs. Sometimes turgescence in the mesenteric veins observable. The different remedies for this disease. The beneficial effects of riding on horseback, especially when conjoined with a change of climate.

The fourth section treats of gout. Of the effects of a cold and humid climate on arthritic constitutions, and the general inefficacy of the remedies used in this disease. The advantage of a change of climate over all other remedies in this complaint, particularly from a cold to a warm one; deduced from the effects of travelling and warm air, in promoting a free and healthy determination of the fluids to the skin, especially in old persons. Also the beneficial effects of a mild climate on the disorders of the stomach, so intimately connected, and almost always combined with gout. Arguments in favour of a change of climate in gout, are inferred from a consideration of the remote causes of the disease. Of its effects in averting the ill consequences of repressed gout, which generally succeed the use of other remedies. Several examples of the extraordinary efficacy of a warm climate in curing gout are recorded in this section.

The fifth section contains some observations on the means of invigorating old age. Exhibits the signs and effects of declining life in old persons, and the particular consequences of the depreciated functions of the system. The reasons are as-

signed why a change of climate may be expected to relieve them, and produce a general invigoration of the fading body. In this section are pointed out, the injurious effect of a cold and humid climate upon old people, and the advantages to be derived from travelling to warm countries. In the opinion of Dr. Gregory, a change of climate is hardly required before the fiftieth year; but after this period, sooner or later according to the strength and constitution of the person.

Before we close this review, we must not overlook the notes which have been subjoined by the translator. Many of them are valuable as explaining the nature of our own climate, and its influence on the human system; and as containing the records of some interesting cases.

BIOGRAPHICAL MEMOIR

OR

Sir Benjamin Thompson, Count of Rumford.

[From the New (London) Monthly Magazine, for October, 1814.]

IF a life devoted to the cultivation of science, with a view to increase the comforts and promote the happiness of mankind, is the most legitimate claim to eminence, then must the name of Count Rumford rank in the very first class of the distinguished characters of the present age, and command the admiration and gratitude of posterity, when the memory of men, whose talents have been exerted only for the annoyance of the human race, is lost in oblivion, or, stripped of its fictitious splendour, become the object of universal execration.

Benjamin Thompson was born in 1752, in the little town of Rumford in New England, where his parents, who belonged to the middling class of society, resided. Their son received the best education that this obscure place could afford; but there is every reason to believe, that he owed more to his own industry and thirst of knowledge, than to the instructions of a master. So early were his talents developed, that he began to instruct others at a period when young men in general are only obtaining instruction for themselves. He also married advantageously early in life, and obtained the rank of a major in the militia of his native district. He had begun to cultivate the sciences with success, when the unhappy contest between the mother country and her American colonies, in which he espoused the cause of the former, drove him from his native land. His local knowledge, and extensive information, gained him the acquaintance and respect of the British generals in America, which, however, he soon quitted, and repaired to England. Here he was consulted on the state and probable issue of the war; and Lord George Germaine, who then pre-

sided over the American department, conceived such a friendship for Mr. Thompson, that he gave him an honourable post in his office, and a general invitation to his table. When the war was drawing towards a close, and it was evident that the American department must be annihilated together with the British dominion in America, the same nobleman, with a view to make some provision for his friend, sent him over to New York, where he raised a regiment of dragoons, obtained the provincial rank of lieutenant-colonel, and became entitled to half-pay. Soon after his return to England, in 1784, his majesty was pleased to confer on him the honour of knighthood.

In the same year Sir Benjamin Thompson made a tour upon the continent, and at Strasburg became acquainted with the present king of Bavaria, then prince of Deuxponts, who so warmly recommended him to his relative and predecessor, the then reigning Elector Palatine and Duke of Bavaria, that the latter invited him into his service, with an offer of the most honourable terms. Having obtained his majesty's permission, he repaired to München, and was employed by his electoral highness in effecting the most salutary reforms of the various departments of his government. He arranged the military affairs, and introduced a new system of order, discipline, and economy, among the troops; constantly endeavouring in all his operations to unite the interest of the soldier with that of civil society, and to render the military force, even in time of peace, subservient to the public good.

The next object to which he directed his attention was the suppression of mendicity. Not only the capital, but the whole country, swarmed with beggars, who levied contributions on the industrious inhabitants,—stealing, robbing, and leading a life of indolence and the most shameless debauchery. Mendicity was actually formed into a trade, and the many thousands who subsisted by it seemed to consider their profession, like others, entitled to peculiar rights and privileges. To such a pitch was this notion carried, that no house, no church, was free from their annoyance; and either the magistrates would

not or durst not interfere with them; while the military, from a mistaken principle of delicacy, would have deemed themselves dishonoured by seizing the individuals, and putting a stop to the growing evil. Sir Benjamin, who had by this time been decorated by the sovereign with the insignia of various orders, promoted to the rank of lieutenant-general, and been created Count of Rumford, after the place of his nativity, determined to apply a remedy to so intolerable a nuisance. Having prepared a building for the reception of the mendicants, and materials for their employment, he fixed upon the 1st of January, 1790, (new year's day having been peculiarly set apart for giving alms in Bavaria,) as the most favourable for the commencement of his operations. Accompanied by the field-officers of the regiments in garrison at München, and the chief magistrates of the city, to whom he had previously communicated his plan, he sallied forth into the streets, and, to prevent the possibility of disgrace being attached to so salutary a measure, he began by arresting the first beggar he met with his own hand. No sooner had the commander set the example, than the officers and soldiers, without making any difficulty, cleared the streets with equal promptitude and success, but at the same time with all imaginable good nature, so that before night not a single beggar was to be seen in the whole metropolis. As fast as they were arrested, they were conducted to the town-hall, where their names were inscribed, and they were then dismissed with directions to repair the next day to the new work-house provided for them, where they would find employment and a sufficiency of wholesome food. By persevering in this plan, and by the establishment of the most excellent practical regulations, the Count so far overcame prejudice, habit, and attachment, that these heretofore miserable objects began to cherish the idea of independence—to feel a pride in obtaining an honest livelihood—to prefer industry to idleness, and decency to filth, rags, and the squalid wretchedness attendant on beggary. In order to attain these important objects, he introduced new manu-

factures into the electoral dominions; and having, during a journey in Italy for the recovery of his health, made himself acquainted with the establishments for the relief of the indigent in some parts of that country, he entertained hopes of enabling the poor of Bavaria to live comfortably by the manufacture of clothing for the poor of Italy.

The change wrought in the hearts and sentiments of those whose external situation the Count had undertaken to improve, could not fail to afford the highest gratification to a mind like his. Every reader of the least sensibility must envy him the emotions which, while he is describing these improvements, suggested passages such as the following:—"When these poor creatures were first brought together, I used very frequently to visit them—to speak kindly to them—and to encourage them; and I seldom passed through the halls where they were at work without being a witness to the most moving scenes. Objects formerly the most miserable and wretched, whom I had seen for years as beggars in the streets; young women, perhaps the unhappy victims of seduction, who, having lost their reputation, and been turned adrift in the world, without a friend and without a home, were reduced to the necessity of begging, to sustain a miserable existence, now recognized me as their benefactor, and with tears dropping fast from their cheeks, continued their work in the most expressive silence. If they were asked what was the matter with them, their answer was, "nothing;" accompanied by a look of affectionate regard, so exquisitely touching, as frequently to draw tears from the most insensible of the by-standers.

"As examples of success are sometimes more efficacious in stimulating mankind to action than the most splendid reasonings and admonitions, it is upon my success in the enterprise, that my hopes of engaging others to follow such an example, are chiefly founded; and hence it is, that I insist, with so much perseverance, on the pleasure which this success afforded me. I am aware that I expose myself to being suspected of ostentation, particularly by those who are not able

to enter fully into my situation and feelings; but why should I not mention the marks of affectionate regard and respect which I received from the poor people, for whose happiness I interested myself; and the testimonies of the public esteem with which I was honoured? Will it be reckoned vanity if I mention the concern which the poor of Munich expressed in so affecting a manner when I was dangerously ill?—that they went publicly, in a body in procession to the cathedral church, where they heard divine service performed, and put up public prayers for my recovery?—that four years afterwards, on hearing that I was again dangerously ill at Naples, they of their own accord set apart an hour each evening after they had finished work to pray for me? Will it be thought improper to mention the affecting reception I met with from them on my first visit to the work-house on my return to Munich after an absence of fifteen months; a scene which drew tears from all who were present?—and must I refuse myself the satisfaction of describing the fête I gave them in return in the English garden, at which 1800 poor people of all ages, and above 30,000 of the inhabitants of Munich assisted?—and all this pleasure I must forego, merely that I may not be thought vain and ostentatious?—Be it so then; but I would just beg leave to call the reader's attention to my feelings on the occasion, and then let him ask himself, if any earthly reward can possibly be supposed greater, any enjoyments more complete, than those I received. Let him figure to himself, if he can, my situation, sick in bed, worn out by intense application, and dying, as every body thought, a martyr in the cause to which I had devoted myself:—let him imagine, I say, my feelings, upon hearing the confused noise of the prayers of a multitude of people who were passing by in the streets, upon being told that it was the poor of Munich, many hundreds in number, who were going in procession to the church to put up public prayers for me—for a private person, a stranger, a Protestant! I believe it is the first instance of the kind that ever happened; and I dare venture to affirm, that no proof could be stronger than this, that the measures adopt-

ed for making these poor people happy were really successful."

Among the other advantages reaped by Bavaria from the Count's residence there, that of the cultivation and actual use of potatoes as an edible, will appear not a little extraordinary. It is, however, not the less true, that it was he who first overcame the prejudices of the people of that country against this root; that he enriched their agriculture, and enlarged their stock of provisions by its introduction. Invariably directing his attention to objects of general utility to his fellow-creatures, the Count also undertook a variety of experiments, with a view to the economy of food and fuel, the result of which were the soups and improved fire-places so well known by his name.

After paying a visit to England in 1795 and 1796, the Count finally quitted Bavaria, and returned to this country in 1799. He was some years incessantly engaged in prosecuting his experiments on the construction of chimneys and the means of increasing the quantity of heat, which is tantamount to decreasing the consumption of fuel. After his improvements on fire-places had been adopted in the mansions of many distinguished individuals, he turned his attention towards the public establishments, and he had in a short time the satisfaction to know that there was scarcely a gentleman's house in England which was not better and more comfortably warmed by his new method. Scotland and Ireland soon followed the example, and the Count repaired to the capitals of both these portions of the empire, with a view to give effect to his beneficial schemes.

To his hints also the country was indebted for the establishment of numerous soup societies; which, during periods of scarcity, have contributed materially to alleviate the wants of the poor, not only in the metropolis, but throughout the whole kingdom.

If, however, the attention of Count Rumford was chiefly directed to the bodily comforts of his fellow-creatures, he was

by no means unmindful of literature and the sciences. On the 12th of July, 1796, he transferred to the Royal Society of London, of which he was vice-president, and to whose Transactions he was upwards of 25 years a distinguished contributor, 1,000*l.* stock in the 3 per cent consols, with a view that the interest be applied every two years as a premium to the author of the most important discovery or useful improvement which shall be made known to the public in any part of Europe, during the preceding two years, on heat or light; the preference to be always given to such discoveries as shall in the opinion of the president and council tend most to the benefit of mankind. To his active exertions also must be chiefly ascribed the foundation of the Royal Institution, the model and parent of several other establishments of a similar nature, though on a less extensive scale, subsequently formed in the British metropolis.

The latter years of the life of this useful man and disinterested philanthropist were spent in France, in the cultivation of his favourite sciences, till death put a period to his labours, on Sunday, Aug. 21, 1814, at his country-seat at Auteuil, near Paris.

The literary productions of Count Rumford have obtained a wide circulation, having been translated into various languages, and are consequently well known. His papers in the Philosophical Transactions, chiefly on matters connected with the object of his beneficent investigations, were rather distinguished for the useful application of which they were susceptible, than for their number. His only distinct publication was a series of detached essays which appeared at different times since the year 1796, and now amount to eighteen, forming four octavo volumes. Such of our readers as may not possess this work, which comprises a vast mass of practical information, will not be displeased to find a sketch of its contents subjoined:—

Essay 1. Account of an establishment for the Poor at Munich, together with a Detail of various Public Measures con-

nected with that institution, which have been adopted and carried into effect, for putting an end to Mendicity, and introducing Order and useful Industry among the more indigent of the Inhabitants of Bavaria.

2. Of the Fundamental Principles on which General Establishments for the Relief of the Poor may be formed in all Countries.

3. Of Food, and particularly of Feeding the Poor.

4. Of Chimney Fire-places, with Proposals for improving them to save Fuel; to render Dwelling-houses more comfortable and salubrious; and effectually to prevent Chimneys from smoking.

5. A Short Account of several Public Institutions lately formed in Bavaria.

6. On the Management of Fire, and the Economy of Fuel.

7. Of the Propagation of Heat in Fluids.

8. Of the Propagation of Heat in Various Substances, being an Account of a number of New Experiments made with a View to the Investigation of the Causes of the Warmth of Natural and Artificial Clothing. (First published in the *Phil. Transactions*.)

9. An Experimental Inquiry concerning the Source of the Heat which is excited by Friction.

10. On the Construction of Kitchen Fire-places, and Kitchen Utensils, together with Remarks and Observations relating to the various Processes of Cookery, and Proposals for improving that most useful Art.

11. Supplementary Observations concerning Chimney Fire-places.

12. Observations concerning the Salubrity of Warm Rooms in Cold Weather.

13. Observations concerning the Salubrity of Warm Bathing, and the Principles on which Warm Baths should be constructed.

14. Supplementary Observations relating to the Management of Fires in Closed Fire-places.

15. Of the Use of Steam as a Vehicle for Transporting Heat from one Place to another.

16. Of the Management of Light in Illuminations; together with an Account of a new Portable Lamp.

17. An Inquiry concerning the Source of the Light which is manifested in the Combustion of Inflammable Bodies.

18. Of the Excellent Qualities of Coffee, and the Art of making it in perfection.

The title-page to these Essays describes the author as Knight of the Orders of the White Eagle and St. Stanislaus, Chamberlain, Privy Counsellor of State, and Lieutenant-General in the Service of his Most Serene Highness the Elector Palatine, Reigning Duke of Bavaria; Colonel of his Regiment of Artillery, and Commander-in-Chief of the General Staff of his Army; F. R. S. Acad. R. Hiber. Berol. Elec. Boic. Palat. et Amer. Soc.

The Count lost his wife before he quitted America. He has left one daughter, the issue of that union.

A French paper, the *Journal des Debats*, in announcing his death, paid the following just tribute to his merits:—"The natural philosophers of every country must admire his ingenious experiments on heat, light, combustion, steam, and numberless other subjects, respecting which he has greatly extended the limits of our knowledge. But what will shed superior lustre on his name, and render it dear to all the friends of humanity, are his investigations on the subject of the poor, mendicity, and political economy. The soups named after him will ever be a benefit to the indigent classes. How many persons have been relieved by them from the horrors of want? Who is ignorant of his numerous improvements in fire-places, boilers, and heating by steam? Who has not heard of his houses of industry, workhouses, and of the Royal Institution of London? Few men have ever had so just a claim to the regret of the learned bodies who did honour to themselves by numbering him among their members; of the poor, whose condition he ameliorated; in a word, of all classes of society, who will derive benefit from his useful labours."

Biographical Sketch of Dr. Boylston.

[From the *Analectic Magazine*, for July, 1815.]

It is a legitimate ground of national exultation, that, while in other countries those new inventions and improvements which add to the comforts, or mitigate the ills, of life, commonly make their way slowly against the opposition of prejudice and individual interest; here they are scarcely known before they become universal. Among hundreds of instances of various kinds which might be given, we need only to mention steam navigation, the practice of vaccination, the improvements of the criminal code, the penitentiary system, and the modern practice in cases of insanity. It is remarkable that this has always been, in some degree, a national characteristic; and one of the most curious facts of our colonial history is, that the practice of inoculation, for the small pox, was introduced into common use in this country from the east, at a time when in Europe, and especially in England, it was confined to very narrow limits, and generally viewed with suspicious dislike. Though the history of this invention is familiar to the antiquarians of Massachusetts, yet, as it is much less generally known elsewhere than it deserves to be, I have drawn up from various sources* a sketch of the life of Zabdiel Boylston, that liberal and enlightened physician, to whose zeal and courage in the cause of humanity, our country is chiefly indebted for this early introduction of the practice of small pox inoculation.

Zabdiel Boylston was born at Brookline, Massachusetts, in 1684. He never enjoyed the advantages of a learned education; but, after acquiring a considerable stock of miscellaneous knowledge from private instruction, studied medicine under

* Mass. Historical Collections, Holmes' Annals, Elliott's Dict. Allen's Biograph. Dict.

the care of Dr. Butler, a respectable physician and surgeon of Boston. In a few years he acquired the reputation of great skill in his profession, rose into extensive practice, and accumulated a fortune very considerable for those times. In 1721, when the small pox desolated the town of Boston, and filled the whole country with alarm and terror, Dr. Cotton Mather, a man of extensive knowledge and general curiosity, pointed out to the physicians of Boston, an account of the practice of inoculation for small pox, as used in the east, contained in a volume of the transactions of the royal society. This communication was received with great contempt by the whole of the faculty, who had probably come to the resolution of the physicians in Moliere, always to follow the ancient practice, whether good or bad; *essere in omnibus consultationibus antienni advisi aut boni aut mauvaisi*; with the single exception of Dr. Boylston. Although this practice was unexampled in America, and not known to have been introduced in Europe, he immediately inoculated his own son, a child of six years of age, and two servants. Encouraged by the success of this experiment, he began to extend his practice. This innovation was received with a universal clamour of invective and opposition. The physicians of the town gave their unanimous opinion against it, and the selectmen of Boston passed an ordinance to prohibit it. A Scotch physician, Dr. Douglass, a man of narrow mind and malignant passions, particularly distinguished himself by his abuse of Dr. Boylston, whom he denounced as a bold, ignorant, and most dangerous quack. But, supported by a strong conviction of the great utility of this invention, and the firm support of several liberal and intelligent clergymen, he persevered; and in the course of the years 1721 and 1722, inoculated with his own hand 247 persons; thirty-nine more were inoculated by others, and of the whole number, (286,) only six died. During the same period, of 5759, who had the small pox the natural way, 844, nearly one seventh, died. Still, however, Douglass and his partisans continued to inflame the public against their benefactor by viru-

lent publications and furious declamation. They argued that his practice was nothing more than wilfully spreading contagion, a crime equivalent to that of poisoning—that as the disease was a judgment from God upon the sins of the people, all attempts to avert it would but provoke him the more; and, forgetting that the argument would extend to any exercise of their own profession, they even contended, that as there was a time appointed unto every man for death, it was impious to attempt to stay or to avert the stroke. Religious bigotry, being thus called into action, in addition to the feelings of personal malignity, so exasperated many of the ignorant against Dr. Boylston, that attempts were threatened against his life, and it became unsafe for him to leave his house after dusk. Time and experience at length came in to the aid of truth, opposition died away, and at last the rancorous Douglass reluctantly declared himself a convert to the new practice, without, however, having the magnanimity to confess the merit of Dr. Boylston. Boylston had the satisfaction of seeing inoculation in general use in New-England for some time before it became common in Great Britain.

In 1725, he visited England, where he was received with the most marked attention from the learned and scientific of the metropolis. He was elected a fellow of the royal society, and contracted an acquaintance and friendship with many distinguished men, particularly with the pious and learned Dr. Watts, with whom he corresponded during the remainder of his life. Upon his return he continued at the head of his profession for many years; he yet found time for literary and philosophical pursuits, and contributed several valuable papers to the transactions of the royal society. He died March 1st, 1766.

His only publications, beside his communications to the royal society, are “Some account of what is said of inoculating or transplanting the small pox, by the learned Dr. Emanuel Timonius and Jac. Pylarinius,” a pamphlet, Boston, 1721, and “An historical account of the small pox, inoculated in New-England,” &c. London, 1726.

Dr. Jackson's Eulogy on Dr. Warren.

DR. J. JACKSON, of Boston, has published *A Eulogy* which he lately delivered on the character of John Warren, M. D. President of the Massachusetts Medical Society. It is neatly and perspicuously written; the praise is high, yet always discriminating, and there is none of that vague exaggeration which so frequently disgusts us in compositions of this class.

The following is a summary of the principal facts which he relates.

Dr. John Warren was the son of a respectable farmer in Roxbury, Mass. He was born July 27th, 1753, entered Harvard College in 1767, where he was graduated A. B. in 1771. He passed two years (at that time the customary period) in the study of medicine, with his brother, Dr. Joseph Warren, a man then eminent for his skill in medicine, but now remembered as the patriot and soldier. In 1773, he commenced the practice of his profession in Salem, where he soon gained reputation and extensive employment. With his patriotic brother, he warmly espoused the cause of liberty; and on the day following the battle of Bunker Hill, resolved to enter into the service of his country. Guided on his way by the blaze of Charlestown, he repaired with his arms and knapsack to headquarters, at Cambridge. On the road he met the tidings of his brother's death, but in the universal confusion which prevailed, it was impossible to ascertain for several days whether the report was true.

The state of torture he endured during this anxious interval, was, in the words of his own private diary, "such as none who have not felt, can form any conception of." In the warmth of his zeal he had resolved to enter the ranks as a private, but his professional merit was known, and he was immediately appointed hospital surgeon; in this capacity he accompanied the army for two years, was in the campaign on Long-Island,

and in the battles of Trenton and Princeton. In 1777 he was appointed superintending surgeon of the military hospitals at Boston, and continued in this station until 1783, uniting private practice with his public duties.

In 1780 he began a course of private lectures on anatomy, which was the first ever formally delivered in New-England.

Several bequests for the foundation of medical professorships in Harvard College, had been made, and at the close of the war, Dr. Warren, at the request of the corporation, formed a plan of a medical school, which was adopted, and he was appointed to the chair of anatomy. He was probably more self-taught than any man who had taken such an office within the two last centuries, never having had the benefit of personal instruction from any scientific professor. But every difficulty vanished before his zeal, industry, and talents; he delivered his lectures for twenty-six years without interruption or assistance, until 1809, when his son was associated with him. In the meanwhile his practice in Boston became very extensive and lucrative, and he twice proffered the resignation of his professorship, but was dissuaded from his purpose by President Willard. In the hurry of business, he yet found or made time for social and public duties, and even for literary labour. He was not ostentatious in his publications; but his *Essay on the Mercurial Practice* is pronounced worthy of high estimation among philosophers and practising physicians.

For more than thirty years he was continually, and unremittently, employed in his professional and public labours. "Probably no man in America," says Dr. Jackson, "has gone through so much business, I will not say in the same time, but even in the longest life." He died after a short illness, in April, 1815.

In private life he was singularly estimable and exemplary.

The most striking feature of his intellectual character was the great and apparently intuitive rapidity of all his mental operations. He was skilled in all branches of medicine, but especially eminent in surgery. His rare eloquence as a lec-

turer will not soon be forgotten; his voice was harmonious; his utterance distinct; his delivery full of animation; his language perspicuous and choice—above all, he was warmly interested in his subject, and anxiously solicitous to interest and inform his hearers.—*Analectic Magazine.*

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

VAUQUELIN has published some observations on the method of precipitating copper from its solutions by iron or zinc. For this purpose, zinc answers better than iron. Unless the zinc be allowed to remain a sufficiently long time in the solution, the whole of the copper is not precipitated; and unless there be an excess of acid in the liquid, a portion of copper is precipitated in the state of oxyd. A portion of the zinc always falls in combination with the copper; therefore the copper, after the liquid is separated, ought always to be digested in dilute muriatic acid, which takes up the zinc without touching the copper.—*New Monthly Mag.*

Gay Lussac has finished a very laborious and complete investigation of the properties of iodine. During his experiments he discovered that chlorine possesses the property of combining in two proportions with oxygen, and of forming two acids which he calls the *chloric* and *chlorous* acids. Davy's euchlorine is Gay Lussac's chlorous acid, but the chloric appears to be the more curious and important compound. We are not yet informed how it is obtained.—*Ib.*

M. Chevreul, Assistant Naturalist to the Museum of Natural History of Paris, has made some new observations on the change which any fatty matter undergoes by its combination with alkali to form soap. The soap of potash and hog's

lard dissolved in water leaves a pearl-coloured substance, which, when separated from the saline matter that it still contains, constitutes a substance possessing very peculiar properties, which, from its pearl colour, M. Chevreul denominates *margarine*. It is insoluble in cold, but easily resolved in hot water. It melts at 133°; and, on cooling, crystallizes in beautiful white needles. It combines with potash, and then resumes the characters of the pearl-coloured deposit. It has a stronger affinity for that base than carbonic acid, which it expels from the carbonate of potash by the assistance of a boiling heat. It likewise separates potash from turnsole, and restores it to its red colour.—*Ib.*

M. Hildebrandt has recently made some curious experiments on the preservation of flesh in the gases. Into a receiver of the capacity of three cubic inches, filled with very pure sulphurous acid gas, he introduced, through mercury, a piece of fresh beef: in a few minutes it had absorbed all the gas, and the mercury filled the capacity of the receiver, except some air-bubbles, probably owing to the atmospheric air. The flesh soon lost its natural red colour, and assumed that of boiled meat: it underwent no other apparent alteration, and the air in the bell-glass preserved its volume. At the end of 76 days, during which time the temperature had varied from 0 to 10° Reaumur, the beef had acquired scarcely any smell of sulphurous acid, and was harder and drier than roasted meat. After being left four days in the open air, it became more compact without being putrefied, and did not change colour: it merely lost the weak smell of acid, without acquiring any other. A piece of ox beef was treated in the same way in the fluoric acid gas, and the results were in every respect similar: the phenomena were only less visible, because the acid attacked the glass, and a thin coating of mercury was deposited on the flesh. Beef deposited in a receiver filled with ammoniacal gas exhibited very different alterations: a total absorption of the elastic fluid had taken place; the meat assumed a fine red

colour, nearly resembling the effect of nitrous gas, and retained this fresh appearance 76 days: it was much softer than in the foregoing experiment, without smell, and having the colour and consistence of fresh meat. When exposed four days to the open air, it did not putrify, but lost its red colour, became brown, dry, and covered with a kind of varnish.—*Ib.*

A shower of meteoric stones having fallen near Toulouse, on the first of April, 1812, M. d'Abuissou, chief engineer of mines, and a deputation of scientific men, were dispatched by the French Imperial Government, to inquire into the particulars; and having proceeded to Grenade, seven leagues N. N. W. from Toulouse, where the phenomenon took place, the following is the substance of their report: About eight o'clock in the evening a brilliant light was seen in the atmosphere at Toulouse, and for several leagues around; this was followed by a very loud noise. It was thought at first that the powder magazine of Toulouse had been blown up, and, when it was discovered that it was unfounded, the light and noise was ascribed to some extraordinary meteor,—for the state of the atmosphere and the force of the explosion did not admit of the idea of its being a simple clap of thunder. A few days afterwards it was discovered that this phenomenon had been accompanied with a shower of stones, two leagues W. N. W. of Grenade. The light which spread over the atmosphere appeared all at once; although the sun had set for an hour and a half, and the air was dark, the light was so brilliant that the mayor of Grenade could read the smallest characters in the streets of the town; and the mayor of Camville compared it to the light of the sun, adding, that the town clock was as visible as at noon day, and that a pin might have been picked up in the streets. The exact duration of this light was not remarked. Some persons estimated it at two minutes, others at one, and others still less; but the fact is, that the light was continuous, and not instantaneous, like that of lightning. The sky around being dark, the body which produced the light

could not be seen. Scarcely had it disappeared, in the place where the aerolites fell, when there was heard in the air, three strong detonations, similar to the report of large pieces of cannon: they succeeded each other rapidly, and almost without any interval. Their noise was such that they were heard at Castres, twenty leagues from the spot where the stones fell. They were distinguished from each other in the neighbourhood of this spot alone. Some persons stated that they were equal in point of noise; others said that their intensity gradually diminished. They were followed by a very loud noise, which some compared to that of several heavy carriages rolling at once upon the pavement; others compared it to the beating of several drums, and others to a strong fire of musketry from the Spaniards having invaded the country. The noise came from the N. E. and proceeded to the S. E. and, after it subsided, a sharp hissing was heard, which ended in considerable shocks, similar to grape shot striking the ground: these phenomena were produced by the fall of the aerolites. Not more than fifty of these stones have been picked up. They are from three to eight ounces in weight, and one only weighed two pounds. They consist of a homogeneous paste of a stony nature, containing a very great quantity of small particles of iron in the metallic state, and very malleable. They do not affect any particular form. The quantity of the aerolites which actually fell must not be inferred from the small number which was collected. It was night when they fell, and most of the inhabitants were in bed: the ground on which they fell was partly in grass and partly ploughed up: into the latter many were no doubt sunk; so that it is more than possible that a much more considerable quantity fell than what is mentioned above: in short, all that were collected fell close to the houses, and of course were easily discovered. The whole that fell therefore may fairly be estimated at upwards of 100, nay, perhaps 1000.—*Monthly Mag.*

A small pamphlet has recently been printed for the use of the governors of the New-York Hospital, intitled *Hints for introducing an improved mode of treating the Insane*, by Thomas Eddy. It contains many sensible and useful remarks on the moral management of the insane, and insists strongly on the superior efficacy of mild and gentle treatment. The substance of this tract is drawn from Tuke's *Account of the Retreat*, an admirable lunatic asylum near York, in England, under the superintendence of the society of Friends; into which neither chains nor corporeal punishments are ever admitted—in which every appearance is avoided which can suggest painful ideas to the patient, and where the whole system of control is founded on the principle, “that whatever tends to promote the happiness of the patient increases his desire and power of self-restraint.” With the exception of this establishment, we believe there is no English hospital for the insane, public or private, to be compared, in this respect, with the asylums attached to the hospitals of Philadelphia and New-York. At least, if we can trust to the report of the committee who examined the London hospitals and private mad-houses during the last year, those institutions are essentially bad, in their whole system; a system of terror, torture, chains, and close, gloomy confinement.

Mr. Eddy concludes by suggesting a plan of connecting with the present asylum in the city of New-York a rural retreat, provided with walks, gardens, and other conveniences, for rural labour and amusement.

There is one improvement adopted in the York retreat, and mentioned in Tuke's account of it, which Mr. Eddy might have noticed; trifling as it may appear, we have no doubt of its effect being very considerable. We mean the substituting painted iron window sashes, of proper dimensions, for the grated windows, and thus removing, as much as possible, the idea of restraint and confinement.—*Analectic Mag.*

During the last summer we announced to our readers, that Dr. Mitchill was employed in examining the natural history of the fishes of the coast, rivers, and lakes of the state of New-York. Since that period this learned, zealous, and indefatigable inquirer, has pursued the study of Ichthyology with great perseverance and success, and has examined, described, delineated, and classed, many species altogether unknown to the European naturalist. He has lately laid this curious body of information before the Literary and Philosophical Society of New-York, and it will soon be presented to the world, in the first volume of their transactions. This elaborate paper is now in the press; it fills about 100 quarto pages, and will be accompanied by a number of quarto plates of many fishes of our waters, which have never been before described; all of them accurately, and some of them elegantly, drawn by Drs. Mott, Inderwick, and Akerly, and engraved by Anderson, an artist who has already distinguished himself by his taste and skill in natural history. Beside making this important addition to the stores of natural knowledge contained in our own language, Dr. Mitchill has made arrangements for communicating information on the Ichthyology and the fisheries of the United States, to the naturalists and politicians of the continent of Europe. M. Noel De La Moriniere, a distinguished naturalist of Paris, has been for some years employed, under the patronage of the French government, in preparing a magnificent publication, on the natural, economical, and commercial history of the useful fish, to be comprised in six vols. 4to. with splendid engravings. Having finished the European part of his work, he addressed a letter to the Baron L'Escallier, consul at New-York, a man of science, and a member of the National Institute, requesting information on the fisheries and fish of the United States. In consequence of this request, Dr. Mitchill has transmitted to M. Moriniere a great mass of important information on this subject.

Analectic Magazine.

Remedy for Weak Eyes.

Placing a piece of green glass on the book, instead of wearing green spectacles, has been recommended in a London Magazine, for those who are affected with weakness of the eyes.

College of Physicians of Philadelphia.

JULY 4, 1815.

The following officers of the College, were this day duly elected, pursuant to their Charter.

President.

Doctor Adam Kuhn.

Vice President.

Doctor Thomas Parke.

Censors.

Doctor Caspar Wistar,
William Currie,
Samuel P. Griffitts,
Thomas T. Hewson.

Treasurer.

Doctor Thomas C. James.

Secretary.

Doctor Joseph Parrish.

PENNSYLVANIA HOSPITAL.

Patients admitted from April 23d, 1814, to April 22d,									
1815,	-	-	-	-	-	-	-	-	544
Attended as out-patients,	-	-	-	-	-	-	-	-	1132

1676

Of this number there were, Cured,	-	1099
Relieved,	-	104
Removed,	-	36
Irregular,	-	30
Infants born,	-	19
Eloped,	-	26
Died,	-	184
Remaining under care,		178

Total, 1676

- -

May, 1815.

The following contributors were elected Physicians, viz.

Physicians for the House.

Doctor Thomas Parke,
Philip Syng Physick,
Benjamin Smith Barton,
John Syng Dorsey,
Joseph Hartshorne,
John C. Otto.

For the Lying-in Department.

Thomas C. James.

For Out Patients.

Samuel Calhoun.

METEOROLOGICAL OBSERVATIONS.

State of the weather at Philadelphia during the first six months of 1815.

JANUARY.

Thermometer—Lowest, at 8 A. M. 10. 30th day of the month.

Highest, at 3 P. M. 46. 2d and 3d.

Mean, 30.

Winds—northerly and westerly—snow on the 13th, and heavy snow on the 22d. River frozen over on the 27th and continued closed to the 5th of March. On the 30th the mercury in some situations was at 3° below zero—at five o'clock, A. M. in the open air, it stood at 5° below zero and continued so until sunrise.

FEBRUARY.

Thermometer—Lowest, at 8 A. M. 15. 1st day of the month.

Highest, at 3 P. M. 40. 21st.

Mean, 30.

Winds—northerly and westerly—much clear weather—several snows.

MARCH.

Thermometer—Lowest, at 8 A. M. 29. 22d day of the month.

Highest, at 3 P. M. 60. 15th.

Mean, 40.

Winds—variable, chiefly westerly and southerly.

APRIL.

Thermometer—Lowest, at 8 A. M. 41. 1st day of the month.

Highest, at 3 P. M. 72. 18th and 27th.

Mean, 53.

Winds—westerly winds prevailed. Thunder and lightning on the 19th, early in the morning. The shad fishery not so productive as at some other seasons, although the fish were large. The spring was cool and backward.

MAY.

Thermometer—Lowest, at 8 A. M. 50. 1st, 2d, 3d, and 15th days of the month.

Highest, at 3 P. M. 78. 29th.

Mean, 60.

Winds—westerly for the most part. Rains frequent. Severe thunder on the night of the 2d inst. Snow six inches deep and sleighing at Plattsburgh, New-York, on the 20th. The waters of Lake Erie, of the rivers Ohio and Mississippi, have been very high this month.

JUNE.

Thermometer—Lowest, at 8 A. M. 62. 7th day of the month.

Highest, at 3 P. M. 89. 20th.

Mean, 70.

Winds—westerly winds prevalent—frequent rains—violent wind on the 20th P. M. with rain. Many accounts of the early appearance of ice islands in the Atlantic Ocean, in this and the last month. The newspapers from Halifax, Nova Scotia, mention, that owing to the coldness of the weather, planting had not commenced in many parts of that province; that considerable quantities of ice were formed in the harbour on the 1st instant. The Quebec papers also mention the backwardness of the season; that on the 4th of June, the trees were not in leaf, only the aspen and birch began to show a little verdure.

The season has been healthy. A few severe cases of typhus fever appeared during the first three months of the year. The measles have continued in a mild form in the present month. No small pox. Vaccination amongst the poor, has been practised to a greater extent than usual. Good prospects of harvest of every kind.

LIST OF RECENT BRITISH PUBLICATIONS.

Medicine, Surgery, &c.

Facts and Observations on Liver Complaints and Bilious Disorders in general, &c. &c. by John Faithorn.

A Philosophical Dissertation on the Hereditary peculiarities of the Human Constitution, by Joseph Adams, M. D. F. L. S.

A Practical Treatise on Porrigo, or Scald Head and Impetigo, the Humid or Running Tetter, with coloured Engravings illustrative of the Diseases, by the late Robert Willan, M. D. F. R. S. edited by Ashby Smith, Member of the Royal College of Surgeons, 4to.

Cases of Tetanus and Rabies Contagiosa, or Canine Hydrophobia, with Remarks, chiefly intended to ascertain the characteristic Symptoms of the latter Disease in Man and certain Brutes, and to point out the most effectual means of prevention, by Caleb Hillier Parry, M. D. F. R. S. 8vo.

Observations on Adhesion, with two cases demonstrative of the powers of nature to reunite parts which have been by accident totally separated from the Animal System, by William Balfour, M. D. 8vo.

A Series of Engravings of Cutaneous Diseases, illustrative of all the principal Genera and Species described in the Practical Synopsis of the Classification of Dr. Willan, published by Dr. Bateman.

An Essay on the Diseases which have been confounded with Syphilis, and the Symptoms which exclusively arise from that poison; illustrated by drawings of the cutaneous eruptions of true syphilis and the resembling diseases, by Richard Carmichael, M. R. I. A.

A Treatise on Fever, with observations on the practice adopted for its Cure, in the Fever Hospital and House of

Recovery in Dublin, by William Stoker, M. D. one of the physicians to that institution, &c. &c. 8vo.

Medico-Chirurgical Transactions, published by the Medical and Chirurgical Society of London. Volume V.

The Morbid Anatomy of the Brain in Mania and Hydrophobia; with the pathology of these two diseases, as collected from the papers of the late Andrew Marshall, M. D. With an account of some Experiments to ascertain whether the pericardium and ventricles of the Brain contain water in a state of Health; to which is prefixed a Sketch of his Life, by S. Sawrey, Fellow of the Royal College of Surgeons.

Surgical Observations on Injuries of the Head, by John Abernethy, F. R. S. &c. a new edit. 1 vol. 8vo.

A Treatise on the Puerperal Fever; illustrated by cases which occurred in Leeds and its neighbourhood in 1809—12, by William Hey, junr. Surgeon to the General Infirmary at Leeds.

Observations on the Diseases of Females which are attended by Discharges, illustrated by copperplates of the Diseases, by Charles Mansfield Clarke, Member of the Royal College of Surgeons, Lecturer on Midwifery, &c. &c.

Medical Transactions published by the College of Physicians in London. Vol. V.

The Morbid Anatomy of the Liver, being an Inquiry into the anatomical character, symptoms and treatment of certain diseases which impair or destroy the structure of that viscus. Part II. by J. R. Farre, M. D.

Pathological Researches in Medicine and Surgery, by J. R. Farre, M. D. Part II.

Engravings from specimens of morbid parts, preserved in Mr. Charles Bell's collection, Windmill Street, and selected from the divisions inscribed Urethra, Vesica, Ren, Morbosa and Læsa.

Commentaries on the Diseases of Children, by John Clarke, M. D. &c. &c. One vol. 8vo.

Natural History, Botany, &c.

An Epitome of the second edition of *Hortus Kewensis*, for the use of Practical Gardeners; to which is added a selection of esculent vegetables and fruits cultivated in the Royal Garden at Kew, by W. T. Acton, gardener to his majesty. Post octavo.

Essay on Dew, and several appearances connected with it, by Charles Wells, M. D. F. R. S.

A General Description of Shells, arranged according to the Linnæan system, by William Wood, F. R. S. and L. S.

A new edition of Dr. Lettsom's *Naturalist's and Traveller's Companion*. All the subjects formerly treated of are carefully revised and adapted to the present state of knowledge, and several interesting additions made.

An Introduction to Entomology, or Elements of the Natural History of Insects, by the Rev. William Kirby, B. A. F. L. S. and William Spence, esq. F. L. S.

A System of Mineralogy, comprehending Oryctognosie, Geognosie, Mineralogical Geography, Chemical Mineralogy, and Economical Mineralogy, by Robert Jameson, F. R. S. E. &c. &c. 2d edit. 3 vols. 8vo.

The classes and orders of the Linnæan System of Botany, illustrated by select specimens of foreign and indigenous plants, 26 numbers, 240 plates—Published in monthly parts.

The History of the Royal Society from its institution to the end of the 18th century, by Thomas Thomson, M. D. F. R. S. L. and E. F. L. S. 4to.

Dr. Adams is preparing an illustration of Mr. Hunter's Doctrine concerning the vitality of the Blood, in Answer to the *Edinburg Review* of Mr. Abernethy's Lectures.

LITERARY INTELLIGENCE.

In the press, and will be published in the course of a few days, by Edward Parker, No. 178, Market Street, a new me-

dical work, of which Dr. William Currie of this city is the author, entitled, *A Synopsis or General View of the Theories or Doctrines of Diseases*, that have been taught at different times; including a critical examination of the theories of the late Doctors Cullen, Brown, Darwin and Rush, and an abstract of that at present taught, by Doctor Gregory, Professor of the Practice of Physic in the University of Edinburg.

THE
ECLECTIC REPERTORY
AND
ANALYTICAL REVIEW.

VOL. V.

OCTOBER, 1815.

No. IV.

SELECTED PAPERS.

Two Cases, with Observations, demonstrative of the Powers of Nature to reunite parts which have been, by accident, totally separated from the Animal System. By WILLIAM BALFOUR, M. D. Edinburgh.

[From the Edinburgh Medical and Surgical Journal for October, 1814.]

THE practice of ingrafting trees first suggested to medical practitioners the idea of repairing mutilated parts. This practice was successfully prosecuted by a few, when the state of society afforded opportunities, but has uniformly been treated with a certain degree of ridicule, by far the greater number of the profession. This distrust in the powers of nature, in the face, too, of evidence which it would be difficult to controvert, is not more unphilosophical in itself, than its influence on practice must be detrimental. What a man believes impossible he never will attempt. But if a branch of one tree unites with the stump of another, so as not only to live, but to bear fruit, it can be no great stretch of imagination to suppose, that a part totally separated from the animal system, may, under proper management, reunite and live, and perform all its proper functions.

A number of years ago, an accident happened, in the management of which I proceeded upon the principle of the

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possibility of parts entirely separated uniting again, with all the success I could desire. This idea was suggested by the necessity of doing something without delay, and the recollection of the Taliacotian mode of forming artificial noses. At that time, however, I knew of no case in which even an attempt had been made to replace parts, as near being totally separated from the system as were those in this instance. This case I did not publish at the time it occurred, for reasons hereafter to be mentioned. Indeed it had almost gone out of mind till a fresh accident occurred, the cure of which by reunion, ranks, under all the circumstances of the case, among the most wonderful instances of the powers of nature, and for ever sets at rest the question, "Whether parts, which have been completely separated from the rest of the animal system, and in which circulation has ceased altogether, can be again reunited?"* There is a circumstance, too, which stamps a value and importance on the two following cases, above all, or most others of the kind,—that is, their authenticity, or the proof that can be offered, that the facts recorded really happened precisely as recorded; a proof which, from the number and respectability of the witnesses, must convince the most sceptical.

The recollection of what took place in the first case, left little doubt in my mind of an equally favourable result in the second; for I never attributed the least degree of the success attending the former, to the small slip of skin that remained undivided. It appeared to me highly improbable, that a connection so very slender could keep up circulation betwixt the system and the separated parts, with a vigour sufficient to keep the latter alive.

From the moment, therefore, I found reunion to have taken place, I began to suspect, that the precautions employed by Taliacotius, and his contemporaries, to keep up circulation in parts destined to supply the place of others, were unnecessary, and inadequate to the purpose. Can it be supposed, for instance, that an extensive surface cut out of the arm for forming an artificial nose, could be fed by a small attachment, with a

* Dr. Thomson's *Lectures on Inflammation*, page 230.

vigour at all proportioned to the celerity with which adhesion by the first intention takes place? It is impossible. Suppose a piece of skin, of such extent, were raised from any part of the body, and allowed to remain, without being connected with any other raw surface, how long, I ask, would that part of its margin, most distant from the attachment left to keep up circulation in the part, live? I am convinced very little, if any blood, would issue from it, except what might be in the vessels at the time of their being divided.

If, therefore, the connection left to keep up the circulation of the excised parts, in Taliacotius's operations, was insufficient for that purpose, these parts must be considered as having been in the same situation as if entirely separated from the system, and their adhesion to the parts to which they were applied as having depended, not on the circulation supposed to have been kept up in them, but on the principle of vitality remaining in them, and on the circulation having been restored to them, by the new surface to which they were attached.

With regard to circulation being kept up, in parts cut out of the forehead, as now practised in India,* it is out of the question. The twist given to the small attachment, left at the root of the nose, must almost entirely preclude any thing of the kind.

I am convinced, therefore, that had Taliacotius at once separated from the system, the flaps of skin with which he repaired mutilated parts, his operations would have been equally successful, infinitely less troublesome to himself, and distressing to his patients. With this conviction, arising solely

* A thin plate of wax is fitted to the stump of the nose, so as to make a nose of a good appearance. It is then flattened, and laid over the forehead. A line is drawn round the wax, and the operator then dissects off as much skin as it covered, leaving undivided a small slip between the eyes. This slip preserves the circulation till an union has taken place between the new and old parts. The cicatrix of the stump of the nose is next pared off; and, immediately behind this raw part, an incision is made through the skin, which passes around both *ala*, and goes along the upper lip. The skin is now brought down from the forehead, and, being twisted half round, its edge is inserted into this incision, so that a nose is formed with a double hold above, and, with its *ala* and *septum* below, fixed in the incision. The connecting slips of skin are divided about the twenty-fifth day, when a little more dissection is necessary to improve the appearance of the new nose.—Gentleman's Magazine for October 1794.

from the success attending the first of the following cases, I was resolved to attempt the reunion of any divided parts that might come in my way, unless such parts were of a magnitude that the apposition of the wounded surfaces would not restrain hæmorrhagy.

There are instances on record, with not one of which was I acquainted when the accident happened to my son, of the *points* of fingers, ears, noses, being nearly or entirely separated from the system, that were made to re-adhere. But *Pedie's* case, so far as I know, is without a parallel; and I have the authority of a number of the first characters in the profession in this place to say, that it is the most extraordinary that has come to their knowledge. This is my apology, if any is necessary, for giving it to the public. For "it must not be imagined, that the recital of such uncommon cases is without its use; for, while they extend our knowledge of the powers inherent in living bodies, they inform us of the advantage often to be derived from allowing these powers proper opportunities of exerting themselves. Of reunion, by adhesion, we are, in no case, to despair, so long as the least degree of circulation remains in both, or even in one of the parts divided*." To this I would add, that many things are left undone, from mere supineness, or a belief that they are impracticable, because they were never known to have been done before. Of what advantage then may it be, to be generally known, that such things as are detailed in the two following cases, are not only practicable, *but have been done?*

Individuals in every line of life, but especially those who work with edged instruments, or who are employed about machinery, would often have it in their power to prevent unsightly mutilations in themselves or others, and be enabled to earn their bread as before. Surgical skill is not necessary in all instances of such accidents. The chief thing wanted is, a conviction that attempts at reunion of divided parts *may* be successful; for whoever has this belief will not fail, when such accidents occur, to give opportunity to the powers of nature to exert themselves. There is, indeed, no saying what may be done in this way. It would be unphilosophical to set bounds to

* Dr. Thomson's Lectures on Inflammation, p. 243.

the powers of nature. And because noses, ears, and the *points* of toes and fingers, are the only parts which, when separated, are known to have reunited, is nature to be blamed for that? The reason is, the reunion of other parts has never been attempted. I would not, however, from these observations, be understood as imagining, that parts of very considerable magnitude, when totally separated from the system, can ever be expected to reunite. The impossibility of this is, I think, evident, *à priori*.

But the knowledge of such facts as occurred in the following cases, must, by increasing his confidence in the powers of nature, induce every rational practitioner to trust more to them, in many circumstances, than he otherwise would do. Therefore, though it would be madness to expect the reunion of a leg or an arm that had been entirely separated, yet I can very easily conceive a leg or an arm to be wounded in such a way, by accident, or in battle, as, according to received principles, to render amputation necessary, but which, in the hands of a surgeon, quite aware what nature can do, might be preserved. I can very easily conceive that, to a practitioner who knows that nature, by her own innate powers, unaided by a single auxiliary artery, can effect the reunion of a finger that has been entirely separated from the system for nearly half an hour, cases may occur, in which he will pause before he takes off a limb, which, but for such knowledge, he would amputate without hesitation. In this view, Pedie's case in particular, will, I trust, be an acceptable present to surgeons in the army and navy, where casualties occur so often, and of course there are such opportunities for observation, and warrantable experiment, and may be the cause of preserving limbs, which otherwise would be lost, to many a gallant man. At all events, it is evident, that the practice of attempting the reunion of separated parts, may be carried farther than has ever yet been done; and it must be a comfortable reflection to an unfortunate sufferer, in the hour of accident, to know, that a whole finger, or even all the fingers of a hand, though entirely cut off, may be restored.*

* A gentleman, to whom I told Pedie's case lately, expressed his regret that he had not known it sooner; for, said he, "Our blacksmith, a very clever

CASE I.

About eleven years ago, Mr. Gordon, surgeon, now, I believe, in India, after having conversed with me for some time one day, in my shop, upon going out shut the door smartly after him, without perceiving any body near it. Unfortunately, one of my sons, a boy of about four years and a half, diverting himself on the outside, had one of his hands in the groove of the hinge side of the door. I was shocked with a wild scream that I heard upon the door being shut; and still more so, when Mr. Gordon came in, carrying the boy in his hands, stretched, from agony, as upon a rack. The points of three of his fingers were completely separated, with the exception of a slight attachment of skin, which barely suspended the parts. The points hung at right angles when the fingers were extended. The point of the index was cut off at the middle of the nail, the fore-finger a little above the nail, and the ring-finger at the root of the nail. The wounded surfaces were necessarily much bruised, but the fingers were, nevertheless, cut so perpendicularly, that, unless I had seen it, I could not have believed a door could have done it. With the assistance of Mr. Gordon, the innocent cause of the accident, I instantly replaced the parts, with but little hopes, I confess, owing to the degree of contusion of the wounded surfaces, of reunion taking place. But I was so shocked at the idea of the boy's hand being mutilated for life, that I hesitated not a moment to put the powers of nature to the test. On the sixth day after the accident I removed the bandages, when I found adhesion had taken place, to the unspeakable joy of Mr. Gordon, the boy, and myself. The skin and nails came off all the three fingers, but were afterwards renewed; and the cure was so complete, that a narrow inspection was necessary to discover any difference between

fellow, a short time ago, struck off three of his fingers, from about the middle. He ran immediately, with the pieces hanging by small slips of skin, to the surgeon of the village, who out with his scissars, divided the slips of skin, threw the fingers away, and contented himself with dressing the stumps." Now, this gentleman did what almost every other surgeon would have done; but had he known *Pedie's case*, the blacksmith, a thousand to one, would have had his fingers to-day.

the fingers of the one hand and those of the other. There was, indeed, no difference to be perceived, but a slight scar on the left side of the ring-finger, at the root of the nail. This case I certainly would have published at the time it occurred, but on Mr. Gordon's account, who, though not the smallest blame was attributable to him, suffered more anxiety and distress of mind than I did myself, and never liked to hear the subject mentioned. I trust he will now excuse me for mentioning him by name, having no other motive for so doing, than the establishment, beyond the possibility of contradiction, of the truth and accuracy of the above statement. Mr. John Moffat, accountant of Excise, Mr. Alexander Milne, surgeon, now on board the *Norge*, 74, and my servants, were likewise witnesses to the facts. The boy died of the scarlet fever, a year and a half after the accident; and but for the following case occurring, which to most, I am sensible, will appear much more interesting and decisive, that of my son would never have been recorded.

CASE II.

On the 10th day of June last, two men came into my shop, about eleven o'clock forenoon, one of whom, George Pedie, a house-carpenter, had a handkerchief wrapped round his left hand, from which blood was dropping slowly. Upon uncovering the hand, I found one half of the index wanting. I asked him what had become of the amputated part. He told me he had never looked after it, but believed it would be found where the accident happened. I immediately dispatched Thomas Robertson, the man that accompanied the patient, to search for and bring the piece. During his absence I examined the wound, and found that it began near the upper end of the second phalanx, on the thumb side, and terminated about the third phalanx on the opposite side. The amputated piece, as measured by the patient himself, was an inch and a half long, on the thumb side, and an inch on the other. The wound was inflicted in the cleanest manner, by one stroke of a hatchet, and terminated in an acute point.

In about five minutes, as nearly as I can guess, Thomas Robertson returned with the piece of finger, which was white and cold; and I remarked to Dr. Reid, who was present, that it

looked and felt like a bit of candle. Without the loss of a moment, I poured a stream of cold water on both wounded surfaces, to wash away the blood from the one, and any dirt that might be adhering, from the other. I then applied, with as much accuracy as possible, the wounded surfaces to each other, expressing a confident expectation that reunion would take place.

I endeavoured to inspire the patient with the same hopes, by detailing to him the success I had in my son's case, which, for the reasons already mentioned, was to me quite decisive of the question, whether or not parts entirely separated from the system would reunite? All this was heard by the patient with a very apparent distrust. But I could do no more than tell him, that, if reunion did not take place, no harm could ensue from the attempt, and that, if it did, a great deformity would be prevented. I informed him, that unless pain or feter, or both, should occur, I would not remove the bandages for a week at least; directed him to keep his fore arm slung, and not to think of any kind of work. At last he entered so far into my views as to promise punctual obedience. He called on me next day, when he felt no particular uneasiness, but remarked, that the wound had not altogether given over bleeding. Assuring him there was nothing in that, desired him to call on me every day; but did not see him again till the 4th of July! Concluding, from his absenting himself without assigning any reason, that he was one of those, too frequently to be met with in the lower ranks, who go from one medical man to another, just as their fancy strikes them, or as they happen to be advised by some of their foolish and ignorant neighbours, and whose ingratitude to any practitioner is in exact proportion to the good he does them, I suspected he had fallen into bad hands, and that I never would hear more of him. On the 2d of July, however, a gentleman called on me, and asked if I recollected a man who had got a finger struck off, about three weeks before, to have come through my hands?

I told him I recollected perfectly well; that I was filled with indignation at the fellow's unreasonable and ungrateful conduct; and that I was just about setting on foot a search after him, not having informed myself either of his name or place where he was employed, at the time he applied to me. The

gentleman said he would save me the trouble, for he could give me an account of the man.

The accident happened on the 10th of June, and on the 12th, the patient, under the influence of the ridicule of his acquaintances, for giving the least credit to my assurances that reunion would take place, applied to another practitioner. This gentleman, I am informed, on being told the object I had in view in replacing the piece of finger, represented the impropriety of any other person intermeddling with it. But, prepossessed with the belief that he carried about a piece of dead matter only, tied to the stump of his finger, the man insisted on having the bandages removed, which was done accordingly. Thus were nearly rendered abortive, my attempts at the reunion of the parts, and the profession deprived of a fact, which, as demonstrating the wonderful powers of nature to repair injuries, is inferior in importance, to none in the annals of the Healing Art. But, fortunately, nature had been too busy for even this early interference to defeat her purpose. ADHESION HAD TAKEN PLACE.

In consequence of the information I got from the gentleman who called on me on the 2d of July, I found out the patient on the 4th, when reunion of the parts was complete. The finger, in fact, is the handsomest the man has, and has recovered both heat and sensation. In the progress of the cure, the skin was changed, and, soon after the accident, the nail fell off; but I have not the smallest doubt that it will likewise be renewed.

From the information obtained, not only from the patient himself, but from those present when the accident happened, I am satisfied, that upwards of twenty minutes must have elapsed before the parts were replaced. For the patient did not apply to me *immediately* upon receiving the injury. He waited on the spot till a great number of his fellow workmen, separated in different apartments of a large building, came to see and condole with him on the occasion. The word *immediately*, in his affidavit, must therefore be understood as so qualified.

I have thought it proper to subjoin the affidavits of George Pedie, Thomas Robertson, and Dr. Reid, to the principal facts and circumstances of Pedie's case, that no doubt might

remain of their truth and accuracy. For "it must be confessed, that instances of reunion among parts which had been entirely separated, are very rare in the human body; so rare, indeed, that most practitioners still treat with disbelief and ridicule the few instances which have been put upon record."* These affidavits are still more necessary to convince people who are not of the medical profession, but to whom the knowledge and belief of such facts may be useful. Numbers of such having heard an imperfect account of Pedie's case, have called upon me to ascertain the truth; but I have never yet met with one who expected me to confirm the facts, of the *entire* separation and *complete reunion* of the parts.

I, GEORGE PEDIE, house-carpenter, declare, That, on the 10th day of June last, when at work in the Advocate's Library, I accidentally struck off the finger next the thumb of my left hand, at one stroke, with a hatchet: That, accompanied by Thomas Robertson, foreman of the work, I immediately went to Dr. Balfour, who, as soon as he saw what had happened, asked where the bit of finger was that had been struck off? That I said I did not know, but believed it would be found where the accident happened: That Dr. Balfour requested Thomas Robertson to go and bring it as quickly as possible: That Thomas Robertson went and returned with it in about five minutes: That Dr. Balfour immediately washed both it and my bleeding finger with cold water, and replaced the piece that had been struck off, and bound it up: That Dr. Balfour said he expected it would adhere, because he had been successful in a similar case eleven years ago, having replaced three of one of his son's fingers that had been cut off by accident, and which completely united: That I had no reason to go to any other than Dr. Balfour, but that I did not believe the part of my finger that had been cut off would reunite, and that I was laughed at by all my acquaintances for ever expecting that it would: That when the dressings were first removed, which was on the 12th of June, reunion of the parts was found

* Dr. Thomson's Lectures on Inflammation, page 239.

to have taken place. And I declare, that the merit of the cure belongs exclusively to Dr. Balfour. All which I declare to be truth.

(Signed) GEORGE PEDIE.
DUNCAN COWAN, J. P.

Edinburgh, 18th July, 1814.

Edinburgh, 19th July, 1814, Compeared Thomas Robertson, mentioned in the preceding declaration, who being examined, declares conform to the preceding witness *in omnibus*. And this is truth.

(Signed) THOMAS ROBERTSON.
DUNCAN COWAN, J. P.

I, PETER REID, physician in Edinburgh, declare, that I was witness to the facts and conversation stated in the above declaration by George Pedie; that I have this day examined his finger, and find that complete reunion has taken place.

(Signed) PETER REID, M. D.
DUNCAN COWAN, J. P.

Sworn before me, at Edinburgh, July 26, 1814.

From the above details, many questions naturally arise; any one of which I am far from pretending satisfactorily to answer. It is impossible, however, to dismiss such a subject without hazarding some observations.

What, then, is the process which nature follows in re-establishing a connection betwixt the animal system, and a part that has been entirely separated from it? It is agreed upon, as the result of observation, however inexplicable the facts may be, that when two recently divided surfaces, both of which are still connected with the system, are applied to each other, with a view to immediate adhesion, or reunion by the first intention, a layer of gluten is first interposed between them. It is reasonable to suppose, that both surfaces contribute equally to

the formation of this layer, which, soon after, is seen to be penetrated with blood-vessels. These vessels, however, are not unconnected, in any stage of their existence, with the surfaces. They do not begin in the substance of the layer and advance to the surfaces. They begin at the surfaces and advance towards each other; or, more properly speaking, they are the blood-vessels which had been divided, now elongated, through the medium of the organizable fibrin, for the purpose of reuniting the parts. Not so with parts that have been entirely separated from the system, and in which circulation has ceased altogether. The fibrin, in this case, must be effused from one surface only, that connected with the system. The vessels of this only can be elongated; and those of the separated part must be nearly passive in the process of re-establishing circulation. The separated part must be considered in a state of suspended animation, still possessing excitability. When new blood comes in contact with the open mouths of its vessels, it is probable that it is absorbed by capillary attraction. This new blood, being the proper and natural stimulus to its own vessels, must excite the dormant vessels to action; and upon this action must depend the connection that is formed between them and the vessels projected from the living surface. Circulation between the surfaces being thus established, must be gradually extended through the whole part that had been separated, by the *vis a tergo*, and the action of its own vessels.

Analogous to this is what happens to persons who are recovered from drowning. Though in them all the functions are suspended, the body is not dead. The principle of vitality still remains. It is, indeed, difficult absolutely to say when this principle is extinguished; at least, nothing short of the formation of new combinations can warrant the conclusion. Thus, though the body may have been a considerable time immersed in water, and is to all appearance dead, if the circulation of the blood can be restored, by the gradual application of heat, friction, and artificial respiration, it becomes reanimated, and is restored to the exercise of all its functions.

Extract of a letter from Mr. Bailey, of Thetford, Jan. 30, 1815.

"I was lately called to an accident which happened to a labouring man, at Croxton, a village near Thetford, who, in attending a chaff machine, worked by a horse, entangled his middle finger with the knives, by which the first phalanx was separated completely: he brought it to me, pale and nearly cold; I was willing to try how far union might be effected, and after cleansing the parts, I re-applied them accurately, and secured them by plasters and small pieces of cards by way of splints. I desired the man to call in a week's time, fully expecting to find the end of the finger mortified, but, to my astonishment, reunion had taken place; pulsation was felt at the end of the finger, and its colour was healthy; the end felt numb to him when he touched it; the nail has come away, and I have pleasure in saying, it is quite well and requires no more attendance."—*London Med. and Phys. Journal, March, 1815.*

MR. CARPUE is preparing for speedy publication, an account of a most interesting and fortunate operation, by which he has restored a nose to a military gentleman who had accidentally lost his original one on foreign service. Mr. C. had mentioned, in some of his lectures, the practice of Gaspar Taliacotius, the Bolognese professor, who, in the sixteenth century, published a book on the restoration of noses, lips, and ears; and also the operations of the Hindoo cast of brick-makers, by which they, for an unknown time, have restored the noses of the victims of despotic barbarism; and had stated his opinion, that the practice was rational, and not fabulous, as many persons had been led to suppose. This doctrine of so eminent a surgeon, coming to the knowledge of the gentleman above alluded to, he determined to submit to the operation, and placed himself under Mr. Carpue's care. Ours is not a medical work; we shall therefore state, in a popular way, that a plaster-model is made of a well shaped nose, which is fitted on the ruin of the former nose. The surface is then measured, by means of paper, and the paper-shape is carried to the forehead, a piece of which is marked of the very shape. This piece is then cut round by an incision, and stripped off in the manner

of a scalp, except the narrow slip, or isthmus, which joins it to the nose, through which isthmus the circulation of the entire system is to be kept up in the scalp, and the piece thereby kept alive. The scalp is turned at the isthmus, so that the cuticle of the scalp may become the cuticle of the nose. Incisions are then made in the cheek on each side the nose, and upper lip, into which the edges of the scalp are inserted, and in which it grows, hardens, and assumes a perfect shape. The nostrils are made afterwards, and the forehead heals while the nose is forming. Such has been the ingenious procedure of Mr. Carpue, and complete success has attended him. In the instance before us the patient has not had occasion to take a single dose of medicine, and has experienced no inconvenience from pain. The cuticle of the forehead is now quite restored, and the nose itself is already so well formed as scarcely to be distinguished from a natural one. It is now three months since the operation; but, in warm weather, Mr. C. is of opinion that the restoration would be completed in two months. His proposed work will inform the faculty of every particular which it is desirable should be known to those who have occasion to perform the same operation, and will be illustrated with several plates. The facts we have stated prove, that although Mr. Carpue has not the happiness to be the original discoverer of the principle which he has practised, yet he has singular merit in conducting the operation so successfully, and is entitled to his country's gratitude for introducing, with so much intelligence, a practice that will restore to society thousands who have been driven from it by their unsightly appearance. For our part, we view in the principle of reproduction, which this experiment so completely develops, new views of the animal economy leading to improvements in the practice both of surgery and medicine; and it justifies a sentiment which we have often pressed on the notice of the public, that there probably still exist, in the hands of the vulgar, meriting the attention of the most enlightened, very numerous discoveries as important as that of the cow-pox.—*London Monthly Mag. June, 1815.*

Observations on the Plague as it lately occurred in Malta.

By A. BROOKE FAULKNER, Physician to the Forces.

[From the London Medical and Surgical Journal for April 1814.]

UPON the pathology and treatment of this most unmanageable of all diseases incident to humanity—the plague—the late experience of medical men in this island, I regret to find, contributes but little to what is already so imperfectly known on the subject. Every attempt to accommodate its phenomena to the operation of general laws, or to discover any thing approaching to a successful method of cure, either by experiment or speculation, has shared the same unfortunate fate as in all former ages.

Such detached notes as I have been enabled to collect from personal observation and practice, I shall here throw together, rather to satisfy the curiosity of my friends who have solicited the offering, than with any expectation of materially benefiting the world by their importance.

Under the disadvantage of hindrance from visiting patients in the Maltese pest-hospitals, I am necessarily precluded from communicating many facts from my own experience, which I should otherwise have been enabled to do. This privation, I have, however, attempted to make up for by conferences with some of the most intelligent practitioners in the island; the results of which, together with my own observations and reflections, it will here be my purpose to render some account of.

The plague, above every other distemper with which I am acquainted, either by reading or experience, is one of the most irregular type, modified in its symptoms and appearances to a degree surpassing all belief and every attempt to explain, apparently by difference of constitution, age, temperament, manner of life, and other constitutional peculiarities in its victims. Most usually, however, its first approaches are marked by some of the following signs: headach, sickness, debility, stupor, rigors, vertigo, vomiting (of a vitiated bilious matter); pain of the back opposite to the region of the kidneys; suffusion of the eyes; an appearance of countenance resembling that of

a person recovering out of a severe fit of intoxication, and inability to stand upright, not unlike what occurs in that state; quick pulse; whiteness of tongue; costiveness; occasionally diarrhœa. Fewer or more of these symptoms, for the most part, characterize the disorder very early after its accession. But it sometimes happens, that, without any other previous indication, globular tumours give the first alarm of its presence.

Of the state of the pulse, I regret to say, I am not prepared to give any satisfactory account, as medical men were all alike absolutely interdicted from informing themselves upon the state of this function. By intelligent authorities, I have been confidently informed, that, at an advanced period of the disease, the pulse was so very much accelerated, as to render every attempt to count it almost impossible, the pulsations feeling rather to succeed each other in a continued stream than marked by any distinct intervals.

Apparently modified by the same peculiarities of constitution, &c. the character of the concomitant fever becomes extremely irregular, assuming every shade of variety from synocha down to the lowest degree of typhus; and, in some instances, having accessions of rigor, not unlike an irregular species of intermittent.

Thirst, the never-failing attendant on all other diseases which are accompanied with febrile symptoms, is not invariably present in the plague, even in the most urgent cases. In patients under excruciating distress, and at the very acmè of the disorder, I have known this symptom either wholly wanting or very moderate. The like remark holds of want of appetite. Throughout the disease, this function is not only not impaired, but augmented to a degree bordering on voracity.

The alvine evacuations are commonly of a darker appearance than natural. I have observed them of a greenish tinge, and mixed with scybala. When lumbrici accompany this state of the bowels, which is not unfrequently the case, they indicate a very unfavourable disease. The greenish colour of the stools was particularly remarkable in the patients in whom I observed voracity of appetite, and would seem to show that this symptom was occasioned by the generation of a strong acid in the stomach and primæ viæ.

It is a striking circumstance, that patients, often at the commencement of the disease, are adverse to admit of their being ill, and that they persist tenaciously in holding the same opinion, until matters proceed so far as to render any confession on the subject unnecessary.

The suddenness with which the plague attacks its victims is altogether incredible, persons being known to enjoy every appearance of good health a few minutes before its attack. The fatal termination is often not less rapid, occurring in a few hours. Certain cases, (though comparatively few,) have been protracted for a fortnight or three weeks before the patients have enjoyed any perfect exemption from danger; and, in some rare instances, after every apparent danger was survived, a phthisis or dropsy has supervened and proved fatal. This occurrence takes place, as might be expected, in persons of a very lax fibre and debilitated habit. Yet, seldom do seven days elapse, upon an average, from the first period of confinement, until the prognosis is decided with sufficient certainty.

Death very rarely follows a gradual extinction of the powers of life. In the greater number of cases it is ushered in unexpectedly by some violent delirious effort, or suddenly terminated in convulsions.

Delirium attends the plague in all its varieties and gradations, though in some cases there is no observable disturbance of the mental faculties at any time of the disease. In others this symptom is diversified from a state of the lowest insensibility to the very highest imaginable degree of excitement, resembling the fury, and accompanied with the actions of the maniac.

The state of the urine is various, being sometimes crude, at others high-coloured, and differing alike in point of quantity; but I did not see, nor could I learn, that the remission or aggravation of symptoms was indicated by any visible alteration in the appearance of this evacuation.

The accounts in circulation relative to the interval that passes from the first application of the pestilential poison until the production of the disease, are very discrepant. Whilst some persons are stated to have been attacked almost immediately after the noxious contact, others were represented to have con-

tinued well an incredible length of time, before any symptoms became evident. But I am certain, that no conclusive experiments have been instituted into this matter, as the people always strove to conceal their illness, along with the history of it, as long as in their power, knowing perhaps what they had to expect from the disclosure, and the consequences of removal to the pest-hospital,—that bourne from whence so few travellers returned.

About sixteen or twenty days are generally considered to be the greatest interval between the application of the cause and the first evidence of the complaint.

The matter of infection, of whatever nature it is, seems certainly to be of a very specific kind, as only communicable by the application of infected substances to the skin: at least the present times have as yet afforded no good reason for confidently believing, that it is received through any other medium than that of contact with the human body, *directly or immediately*.

The many instances which have happened of whole families escaping the infection, after one or two of them had been removed labouring under severe symptoms of the disease, would seem to prove beyond a doubt, that a certain concurring state of the body was absolutely necessary for the reception of the pestilential virus. Several very remarkable cases of this were narrated to me, and some I have myself noted, of patients being taken from the bosom of their families in the most distressing disease, and with perfect impunity to those with whom they had communicated;—children from their mothers, and husbands from their wives. Yet these families had used no kind of precaution whatever, not so much as an attention to common cleanliness. To enter into a detail of such instances, would itself be a voluminous labour; they are matter of the most public notoriety. To go no farther than the regiment of De Rolls, the medical care of which was in a great measure entrusted to myself, I have known cases of plague taken out of the very heart of a company, and of so urgent a kind, as to prove fatal in a day or two, whilst the rest of their comrades continued to enjoy very perfect health. Neither was there here any obvious cause to which their escape could be ascrib-

ed,—oil frictions, fumigations, or any other description of precaution, prevention, or antidote. My own Calesse man and two of his children died of the disease, but his wife perfectly escaped, as did also his brother-in-law, who was constantly in the habit of familiar intimacy with them all. I am not acquainted with a poor family in Malta, who are more negligent of personal cleanliness than this I am speaking of. As to any precautions of rubbing with oil or vinegar, they were wholly ignorant of any thing of the kind, until I directed them, considerably subsequent to their misfortune.

Though for my own part I have a strong persuasion that the infection of plague may be not less liable to be received by that species of contact which can reasonably enough be imagined to take place by inhalation, I am not enabled to adduce evidence sufficiently satisfactory to decide the fact. I find there still exists a great contrariety of sentiment upon the subject. To determine the truth with precision would require a deliberate experiment, which I fear few would be disposed to make. The escapes of the attendants, who were necessarily much and closely engaged about the persons of the infected, holds out presumptive proof, that the matter of infection is at least not of so virulent a kind as to be carried deleteriously any great distance in the atmosphere.

Instances of reinfection have not been frequent, I am informed; yet, in one individual, I knew it to take place three times, in each succeeding one the symptoms growing milder. The example here alluded to furnishes an exception to the general remark, that the plague proves most fatal to those of a lax fibre. This person was of a remarkably delicate habit. Upon the comparative degrees of susceptibility of men, women, and children, I could not obtain any precise intelligence, or rather the accounts given to me were so much at variance, that little could be inferred from them. I think the balance was, upon the whole, rather in favour of the opinion recorded by some early writers, viz. that the two latter are the most liable to be infected, and that the debilitated of the same sex are more susceptible than the most robust.

As to the diagnosis in plague, it is often a point of much

embarrassment to pronounce with absolute certainty upon. The muddy dull eye, described by Russell, is, in my opinion, without doubt, one of the most leading and faithful monitors of its presence. I seldom found myself mistaken, in regarding a case as plague, when there was any unusual whiteness of tongue, accompanied with this appearance of the eye, even though there was no intumescence or redness about the glands visible, and the patient did not confess any complaint. When this appearance of the eye and tongue concurred with glandular swellings or external tumours, the point was placed beyond a doubt.

With regard to the prognosis, I think it may be generally assumed, that the less severe the affection of the brain is, and the more remote the symptoms from indicating a state of putridity, favourable hopes may be proportionably entertained for the issue. But here, too, our expectations were often suddenly frustrated; some cases which have gone on to prosper, for several days terminating unexpectedly in death, whilst others, which continued for whole weeks, apparently in the most hopeless state, have as agreeably disappointed our fears, and been ultimately restored to pristine health and vigour.

Buboes, when they come out tardily, denote commonly an ungracious disease. When they go on speedily to suppuration, or when they recede whilst the other symptoms meliorate, there is the fairest hope of a prosperous event. The same may be stated of the condition of the carbuncles.

I need hardly observe that subsultus tendinum is a symptom which augurs an irrevocable fate.

It has been communicated to me with more confidence than most other peculiarities of the plague, that the nearer the glandular or other tumours or external appearances approach to the head, the prognosis is proportionally unpromising.

A diarrhœa coming on early to any great extent, when the brain continues much affected, is accounted among the signa infaustissima.

The spontaneous supervention of an early perspiration is a flattering omen. It seldom fails to relieve the febrile symptoms, and to be followed by general amendment.

In some cases the glandular swellings do not make their

appearance until very near to death, when some slight tumefaction is to be seen by a close inspection. Instances are not wanting after death, of these swellings subsiding entirely out of sight. After death, several cases have occurred of petechiæ manifesting themselves for the first time, when I have seen, also, very broad livid spots, covering the whole of the lower part of the trunk and extremities, of about the diameter of a quarter of an inch each.

The petechiæ which I observed upon the dead were various in point of size and colour; on one of a dark or dusky brown; on another, inclining more or less to lividity; on one they were almost imperceptibly minute; on another as large as flea-bites. Their seat is commonly over the breast, arms, or wrists, but they come out likewise upon the back or lower extremities.

The carbuncles that fell under my observation were of that kind described by authors as the wet carbuncle, sloughing into very deep sores, and attended, during the progress of inflammation, with an extremely painful burning sensation. At first they arise like a phlegmon, gradually acquiring a diffused and highly inflamed base, and having, not far from the apex, a concentric areola of a deep livid, and more internally of a cineritious colour, and a glossy appearance. The eruption of carbuncles is not confined to any particular part of the body or limbs, though more commonly their situation is upon some part of the extremities. Of the *dry* carbuncle, or that occasioned by the confluence of the pestilential eruptions, called blains, I have not had personal experience, nor have they been very often noticed by others. I have, however, received some account of them, as they occurred in a few cases, and which pretty exactly corresponds with the description given of them by authors, being of a dark gangrenous colour, without much pain, with little or no inflammation, and not elevated above the surface of the skin. They are accounted to designate a very unfavourable disease.

Irregular and inconstant as are all the phenomena of this perplexing disease, its varieties, as remarked on the late occasion, may, I think, be classified under the three following species, viz.

I. That in which, at the first attack, the energy of the brain

and nervous system is greatly impaired, indicated by coma, slow, drawling, or interrupted utterance. In this description of the disease, the tongue is white, but little loaded with sordes, and usually clean, more or less, towards the centre and extremity; the anxiety is great; cast of countenance pale; stomach extremely irritable, and the strength much impaired. Rigors and pain in the lower part of the back are among the early precursors of the other symptoms. This was observed to be the most fatal species of plague, and prevailed chiefly at the commencement of the late disasters. Those who were thus affected sometimes died in the course of a few hours, and with petechiæ.

II. The next species I would describe is, that in which the state of the brain is the very reverse of what takes place in the former, the symptoms generally denoting a high degree of excitement: the pain of the head is intense; thirst frequently considerable, though sometimes wanting; countenance flushed, and utterance hurried. The attack is ushered in by the same rigors and pain of back as in the foregoing. Epistaxis not unfrequently occurs in this class of the disorder. The glandular swellings come out very tardily, and, after appearing, recede again without any remission of the general symptoms. Carbuncles arise over different parts of the body or extremities, which are rapidly disposed to gangrenous inflammation. The delirium continues extremely high and uninterrupted, and the patient perishes in the course of two or three days. Sometimes he lingers so far as the seventh, yet rarely beyond this period, without some signs of amendment. Of this second description the examples have been very numerous, and were nearly as fatal as the preceding. In the countenances of some, just previous to the accession of the more violent symptoms, there is an appearance of despair and horror which baffles all description, and can never well be mistaken by those who have seen it once.

III. The third species which I would enumerate, is nearly akin to the last, only the symptoms are much milder, and the brain comparatively little affected. The buboes and other tumours go on more readily and kindly to suppuration, and by a prompt and early employment of remedies, to assist the sa-

lutory operation of nature, the patient has a tolerable chance of surviving. Cases of this class are often so mild, that persons have been known to walk about in seeming good health, and without any evident inconvenience from the buboes. Of this last species, the instances have, thank God, not been unfrequent, chiefly occurring towards the declension of the malady.

With relation to the means of prevention or cure, I have, alas, little to offer which flatter our expectations of subduing the enemy, or disarming him of his terrors.

Of the preservatives which have been most universally in repute, washing with soap and water, rubbing with vinegar and with oil, are the principal. But I am yet to learn of any well authenticated instances, which point out that any means of prevention have succeeded so well as a strict and unrelaxing attention to cleanliness, and shunning of contact with persons or things imbued with the contagion. These are the only means I have ever used myself, if I only except the oiled silk dress which I took occasion to recommend for the attendants of every description, in our military plague-hospital. Even without the dress, however, I have been in the habit of approaching close to patients in the most advanced stages of the disease, with no other safeguard than that of a sponge dipped in vinegar, held to my face. In the oiled silk dresses, as affording a protection against contact of infected substances, I have the greatest confidence. When persons are constantly obliged to be about the sick, and who have not a disposition to strict personal cleanliness, these dresses are, in my opinion, altogether invaluable as an armour.

Upon the preservative virtues supposed to be possessed by oil frictions I have many doubts, notwithstanding the terms in which they are mentioned by so respectable an authority as Mr. Baldwin, and their antiquity, being recommended by Celsus. I have made much enquiry into the subject, without being able, in any degree, to convince myself of the justice of the opinion which has been entertained of its anti-pestilential efficacy. So early as the time of Diemerbroek, that celebrated professor advised stimulant oil frictions, both as a preventive and remedy in the plague, for which purpose he particularly

recommended a combination of the oils of nutmeg, amber, cinnamon, mace, cloves, and some others, with which those who were obliged to go out of doors, or to be otherwise exposed to infection, were directed to rub every exposed part of the body, and over the region of the stomach. In perusing a late authority on this subject, I find there was an oil called *naï' ἔλαιον*, *oleo di Gran Duca*, much in repute in Italy as a preventive. I have not been able to ascertain its composition, or indeed whether it was simple or compound. Thus far authorities are in favour of the practice. But, when it is considered what a great length of time has elapsed, since even the latest of the above cited authors flourished, and what havoc the plague has gone on to spread through the world since, I fear mankind have not much reason to confide greatly in the conservative virtues of oil, or any other antidote with which books make us acquainted. Like the amulet's charm and St. John's books, which have in their day, too, imposed on the credulity of man, it is to be feared that the belief in the efficacy of oil is revived only in its turn to fall into equal oblivion.

Orræus, physician to the late Empress Catherine of Russia, pointedly states, that those who were engaged in occupations connected with animal fats, were most liable to catch the infection of the disease.

But, even though I should not be altogether disposed to discard oil frictions as entirely useless, (for there is certainly some plausible reason for supposing that they may, in some measure, serve to defend the skin from absorbing the noxious matter of the plague), yet there have been so many instances of persons living in the closest cohabitation with the infected, escaping *without the use of oil*, as well as so few clearly attested cases of persons proved to have come into contact with the pestilential virus having been preserved by *oil alone*, that, in my judgment, the inference of its possessing any certain quality as a preservative against the plague is premature, and destitute of any sufficient support. The fact is, many of those who have most diligently used oil frictions have perished; and there are unfortunately several instances at the present moment in the third garrison battalion, of men being assailed by the plague, who, before mounting their guard, (which was the only

time they could possibly be exposed to the contagion) were obliged to apply the frictions of oil with all the punctuality of military discipline. Moreover, an immense proportion of the attendants of the sick in the Maltese pest-hospitals, who were enjoined the use of inunctions, have fallen sacrifices to the disease.

But to reason a little upon the point. How shall we have cause to credit that the application of oil frictions to the surface of the body is entitled to much confidence as a preventive, when we know that it is almost invariably attended immediately after with profuse perspiration? For as the perspirable matter can make its way outward through the excretory pores of the skin with so much facility, is it more unphilosophic to suppose, that when the perspiration has ceased, the subtile virulent matter of pestilential infection may make its way with equal facility inwards through the absorbent pores, at least sufficiently so as to exert its noxious effects upon the constitution? Without meaning to reason conclusively, I advance this as mere matter of speculation.

Those who have perused the account of the great plague in London, cannot have forgot the high reputation in which tar, pitch, and some other substances were held as defences against the contagion. Indeed, as a farther exemplification of how far imagination is apt to impose upon mankind in these matters, almost every writer, from the time of Procopius to the present, supplies some instance or other of certain things possessing conservative virtues in this disorder. Among others, issues obtained the most unqualified credit. Girolami Mercuriale, whose authority as a writer was in no mean estimation for a considerable time among the Italians, when observing upon the efficacy of issues, uses these strong words: "*Dicam quod ego experientiâ vidi. Possum testari me innumeros hâc peste extinctos vidisse, nec unquam quemquam qui habet cauterium præter unum tantum atque ille erat sacerdos.*" In this assertion, he is supported by several corroborating testimonies of the same time.

I have dwelt the longer on this subject, as it may be of some consequence that the credulity of mankind is not imposed upon to place confidence in any supposed means of preser-

vation which may only lead to greater risks. Of all the means which have come to us, recommended either in ancient or modern days, as productive of advantage in securing the safety of persons engaged about the infected, I believe none deserves the same degree of faith, as personal cleanliness, avoiding contact, or using immediate ablution after a foul contact; shunning the breath or the vapour exhaling from the bodies of the sick; ventilation; the fumes of the mineral acids; sustaining the animal spirits by generous living, and by exercise; and lastly, though not less importantly, by the use of oiled dresses, the texture of which is so completely stopped, as to prevent the passage of the most minute particles of any matter from without. In the dreadful plague, which, almost a century ago, swept off 50,000 inhabitants of Marseilles, it was by these means only, (the mineral acid fumes excepted,) that the faculty of physicians entirely escaped, though engaged throughout the whole of that mortality in the closest intercourse with the infected. The success of the same plan, as pointed out by myself in our military pest-hospital, is a decided proof of the credit which is due to this practice; not one of the attendants having been attacked with the complaint, though in constant habits of handling infected substances, and coming into contact with the sick.

All those whom I know to have felt the pulse of plague patients with the naked hand, have, by nothing more than a prompt ablution, escaped with impunity. They were not so much as provided with oil.

Vaccination, though it some time since obtained great repute as a preventive against the plague, and enlisted even the powers of the press in its praise, has not, upon the present occasion, appeared to justify any degree of faith in its virtues. Several observations have been attentively made, the result showing, that those who had not undergone the operation escaped in just as great proportion as the persons who had been vaccinated.

I have not noticed such striking effects from the variation of atmospheric temperature on the plague as I was at one time led to expect. I am aware, however, that there are not wanting some who imagine, that a diminution in the numbers of the infected was produced by this cause alone. I have, I think, much more invariably remarked, that a high wind, from what-

ever quarter it came, exerted much more evident effects in diffusing the contagion. Indeed, this was the subject of very universal observation; the people whom I have conversed with attempting to account for it, by supposing that the particles of contagion might be transported and driven with force from one person to another in the street. Lame as this account of the matter must be admitted to be, it will serve as a confirmation to the justice of the remark, that some increase in the numbers of the sick did very uniformly follow upon occasion of a high wind.

The declension of the malady towards the latter end of the summer and autumn, though ascribed by some to the variation of the atmospheric heat, was the plain and indisputable consequence of the rigorous precautions which then had begun first to be properly enforced. The point I think is proved from the suddenness of this change of measures in diminishing the numbers of the sick, and confining the disease almost entirely to the houses that had been previously infected, whilst the alteration of the thermometer was hardly perceptible.

I shall next proceed to give such an account of the method of cure as I have had an opportunity of gleaning from persons engaged in attendance about the sick, and from my own practice.

The indications are,

1. When inflammatory symptoms are violent at the commencement of the disease, to moderate them cautiously.
2. To restrain all inordinate efforts of nature, or to support her when exhausted.
3. To counteract putrescency.
4. To evacuate the morbid matter.

These it is proposed to fulfil, by Evacuants, Tonics, Antiseptics, Blisters, Sudorifics.

The evacuants most esteemed by the native practitioners, are mild laxatives,—as cream of tartar, manna, almond oil, &c. particularly this last. It is only at the very first attack that these opening medicines are usually employed by them, and when the bowels are evidently constricted. A purgative, properly so called, is very rarely ever exhibited by the Maltese in this complaint, unless in extremely plethoric habits, and

when there is a great phlogistic diathesis; then the Epsom, or *English salt*, as they call it, is given in a moderate dose.

Bleeding, either general or local, is held to be pernicious, and has seldom or never been had recourse to by the natives on the present occasion. I have myself, however, made trial of it locally, and in habits when, from the state of the other symptoms, and particularly the affection of the brain, I considered it indicated. In this case, I preferred taking away a few ounces from the temples by leeches. I am far from feeling assured, however, that any benefit was derived from the practice, nor am I certain that it has not paved the way for greater mischief, by increasing the indirect debility. It is at best, in my judgment, but a precarious remedy, and I believe it is considered as such by the almost universal consent of mankind, whatever the practice has had a fair trial. I have been informed by one individual, that in a few cases of blood being taken by him from the arm, it threw up a buffy coat, and the patients recovered. By another I was told, that the blood taken in this manner was in a very dissolved state, yet the case proceeded well. These were, by description, all persons of nearly the same habit, and in the same stage of the disease,—robust and plethoric.

When the affection of the brain is urgent, betokened by high delirium or a very low state of coma, I have applied blisters very generally to the temples, the nape of the neck, over the hinder or fore part of the head, or behind the shoulders. Blistering over the abdomen having acquired some degree of credit, I made trial of it also, but cannot give any decided opinion of its advantage. The Maltese practitioners seldom or never apply blisters unless under the buboes, and then only with the intention of promoting suppuration, which they are thought to do. In some rare instances they have put them to the nape of the neck, but without placing any great confidence in their success. Sinapisms have been much more confidently represented to me as effectual, when applied to the soles of the feet, with the view of relieving delirium by revulsion. Mild emetics of ipecacuanha are generally thought beneficial, when administered at the very onset of the distemper; given at a late period, they have not been attended with any success, or per-

haps have done positive mischief by determining too much to the brain.

The antispasmodics and tonics most esteemed by the Maltese are Colombo, Gentian, Peruvian bark, and *Serpentaria Virginiana*, each given in the form of decoction. These are prescribed at a very early moment, when the state of the brain allows of their exhibition, and after debility has begun to supervene.

The sudorific most in use by the natives, is the spiritus mindereri, given freely with plentiful dilution of lemonade, or other mild beverage, and aided by the free use of elder-flower tea. This latter is a favourite remedy among the Turks. My own practice has been entirely confined to the former. I have not been able to learn that antimonials have had any trial among the Maltese in this disease. Used by our military surgeons, antimonials have obtained rather a favourable character, in the form of James's powder, or the pulvis antimonialis of the London Pharmacopœia.

Vegetable acid, particularly lemon-juice, was given very freely in common drink by the Maltese, to which practice the Asiatics are likewise much devoted. But I cannot persuade myself that the promiscuous use of these acids is not pernicious, in cases where there is a strong disposition to the generation of acidity in the stomach and bowels.

The actual and potential cautery have each obtained reputation for their efficacy in the maturation of buboes. They were resorted to by the native practitioners on occasion of these tumours coming forward very reluctantly, and when, at the same time, the other symptoms proceeded doubtfully or unfavourably. But when the actual cautery did not soon succeed in promoting suppuration, I have been credibly informed, that the tumours have receded, and this recession has been speedily followed by aggravation of all the other symptoms.

When the glandular and other tumours were accompanied with any great degree of pain, emollient poultices gave much relief. After they had degenerated into a sloughing state, warm stimulant applications produced good effects in causing the separation of the dead from the living substance. With the same intention I have seen camphor and oil of turpentine ap-

plied with benefit, whilst scarification also materially assisted in expediting this separation.

Camphor, given internally, has long maintained a great share of credit in the treatment of plague, exhibited in moderate doses, being considered useful as a stimulant and antispasmodic, and in certain states of the brain. It has not, however, been much employed by the Maltese. As far as my own observation goes, camphor, like some other medicines, appears to have been extolled for virtues, which experience by no means proves it entitled to.

Calomel has not been in use as a purgative among the native practitioners in the plague. It was in a few instances administered in small doses, as one of those gentlemen informed me, with the intention of co-operating with external mercurial frictions or applications for the maturation of buboes.

Opium is supposed in some cases to be good, when there is much restlessness, and provided the condition of the brain and other symptoms does not contraindicate its employment. I have myself not given it a trial. When it succeeds in composing the patient, and in favouring perspiration, it becomes a valuable remedy: but it is found necessary to use it with great circumspection.

Wine is not in very general use with the Maltese for the treatment of any stage of the disorder. In my own practice, I could ascribe much advantage to its cautious exhibition, at an advanced period, particularly when there was much debility and low delirium. I generally directed it to be given in sago, and in moderate quantity. When wine was employed by the natives, the sweet malaga was preferred.

Cordials were resorted to with equal caution as wine.

Some cases were detailed to me by the surgeon of the 3d garrison battalion, in which he thinks he succeeded in arresting the progress of the plague, by the very early and diligent application of mercurial frictions, giving previously not less than 12 grains of calomel, in robust habits, to clear the bowels. Of these cases, this gentleman informed me that he had not kept a detail, but in most of them, besides other suspicious symptoms, he said there was the evidence of tumefied glands. The patients rubbed in the ointment themselves. Bleeding,

either general or local, was not employed but in one or two of these cases. The warm bath was tried with a few, and seemed to be of some advantage in assisting the operation of the emetics.

I have tried the cold affusion in two cases, in one of which it appeared to produce very immediate good effects. The patient was soon relieved in all his feelings, and there succeeded a perspiration, aided by sudorifics and diluents, which in a short time put to flight all the symptoms. The cold water was applied about the third day after his confinement. Along with the remission of other symptoms, the bubo disappeared. This was a case in every respect such as Dr. Currie describes as adapted to the experiment in typhus. In the second instance, I had not the same reason to hope for its good effects, on account of the length of time that passed previously to its employment, and the exhausted condition of the patient.

A Maltese practitioner detailed to me one very striking instance of the good effects derivable from the sudden application of cold water. The case was that of a man who, in the height of delirium, and labouring under a most unpromising disease, ran violently out of his chamber, and precipitated himself into the sea, from which he seemed to have experienced the most sudden relief. He repeated this a second time of his own accord, and was soon restored to a state of convalescence, from which he perfectly regained his usual good health. This case, too, was one, in all respects, from the description I received of it, well suited to the experiment of the cold affusion. The application of cold water to the surface, has had no trial in the Maltese pest-hospitals.

The theriaca continues in some estimation among the Maltese, as a sudorific and febrifuge, and was usually given in the evening.

The Maltese have been under the same restrictions in feeling pulses in the plague cases as the English. They consider it themselves as altogether an unprofitable risk among the means of judging of the patient's situation, regarding the state of the other functions as a sufficient direction for every purpose of practice.

Such is nearly the sum of the information I have been ena-

bled to collect upon this disheartening subject; the result of which, I deeply lament to see, goes to verify the words of the poet:

Dum visum mortale malum tantæque latebat
Causa nocens cladis, pugnatum est arte medendi,
Exitium superabat opem, quæ victa jacebat.

So true is the observation of the celebrated physician Chicoyneau, that there is no disease in which so many modes of treatment have been devised without effect.

With respect to any point which I have here treated upon the representation of others, I shall hope for every due forbearance, should I have failed, in any respect, in my intention of fully and exactly producing the meaning of my authority. I might have noticed many other opinions, but conceive that what are already stated embody the sum nearly of what is most important to be dwelt upon with any earnestness. In a word, I believe it may be roundly asserted, that, after all this fatal experience, not one single remedy has been stumbled upon in which any certain efficacy was discovered to reside, and that the practice in plague is still at the present day little more than an empirical routine.

No one more sincerely laments than myself, the restrictions which were laid upon scientific investigation, to explore the nature of this destructive disease, particularly as so fair an opportunity of obtaining some useful knowledge respecting it may perhaps never again offer to a British practitioner.

It is pretty evident, from the crude detail I have succeeded in gleaning of the notions entertained by the practitioners of this island, respecting the treatment of the plague, that they still adhere to the old opinion of its belonging to the class of putrid typhus, and that their practice, with the exception of bleeding, is not far different from that recommended by Sir John Pringle in malignant fever.

It will be easily believed, that, the dissection of dead bodies was a privilege quite out of the question, since the mulct for feeling a pulse, even through a tobacco leaf, and with every possible caution, was not less than 15 or 20 days close quarantine.

The principal navy-surgeon of this station was confined to his house for twenty-five days, on account of having felt the pulse of a man in his own particular department, and though, after the contact, he used every kind of care to prevent the absorption of the virus. This gentleman, Mr. Allen, was one of the most zealous advocates for carrying the investigations of science to unravel the mysterious nature of this distemper, whose hindrance in so laudable a purpose is the more to be lamented.

It may be proper to notice, that his excellency Lieutenant-General Oakes, whilst opposing my desire of visiting the Maltese pest-hospital, was pleased to assign as his motive for so doing, an anxiety that the army might not be deprived of medical assistance in the time of need. Could I have myself ventured an opinion upon the subject, in opposition to so high authority, I should certainly not have hesitated to say, that this prohibition of medical officers from visiting the sick, so far from being an eligible measure, was calculated to oppose the most complete impediment against availing the army of any benefit whatever from their advice, by shutting out the only satisfactory inlets to medical knowledge. If this be not admitted, it must follow, I should think, that it was of very little consequence whether medical men were employed or not.

It may be expected that I should say something on the history and introduction of the plague into this island. The most current account is, that of its being brought in by a vessel from Alexandria, laden with linen, flax, and leather. But as there were so many channels through which, from the state of the quarantine defence, this insidious malady may be supposed to have crept in, it appears to me little less than mere waste of time, to take any pains in tracing this event to any particular instance of laxity in the department of public health. It is somewhat remarkable, that the history of the introduction of the plague, when it made so great ravages on the last occasion in this island, above a century ago, was nearly similar to what is circulated of the present, being attributed to some linen brought from a Levant vessel by a Maltese shopkeeper; which, after producing the disease in all those who first came in contact with it, ultimately disseminated the malady through the

whole population. The same delay, too, which proved so fatal in the present instance, was at that time also the cause of the extension of the disorder. Whilst the different colleges on the continent of Europe were referred to for their opinions on the identity of the disease, it was daily gaining ground: and when finally the answers of those colleges arrived, deciding upon the nature of it, a lamentable proportion of the population had already been carried off. So necessary is it to oppose with vigour the first advances of this deadly enemy, and by the earliest moment to be prepared against his attempts. The faculty of Rome, addressing a Maltese physician at that time on the precautions to be enforced for the public safety, emphatically observes, "Denique licet, aliqui negent eum morbum pestis contagiosæ nomine insigniendum, tamen in casu ancipite, ubi de publica salute agitur, tutior pars eligenda etiam cum incommodo rerum, ne serpet latius malum." This is the doctrine which was so unfortunately thrown away upon ourselves at the present time. It would not, perhaps, be strictly in place, to produce any detail of examples to prove the truth of this, else I might, even from my own limited experience of the proceedings of that department, fill a great many pages upon this topic alone. To pass over every other instance, I may merely observe, that the servants who conducted the first case of plague to the Lazaretto, returned in eight days, and mixed at liberty with the population; that the physician who attended this case was likewise at liberty to go through the city before being subjected to any quarantine restrictions; that the public hired carriages were allowed to take fares, though lined with cotton; that, for several weeks after the plague entered Valetta, the intercourse among the population was more or less promiscuous, the seclusion of people within their houses not being enforced with any punctuality; that even the carter who drove a pest-cart was not put under quarantine restrictions for a considerable length of time, in consequence of which he was in the frequent habit of going out at pleasure, and marketing for his family, the greater part of whom died of the plague. Since so many instances existed of laxity in the department of public health, can it be wondered that the plague had a rapid and wide circulation? Nay, until the month of July was well ad-

vanced, there was not even yet a corps of *trusty* guards organized to give proper effect to any ordinances of public health. The houses of the infected inhabitants were shut up for weeks, without being purified or cleansed, although containing articles of the most susceptible kind, and even living animals; whose escape, it is well known, is liable to carry the disease wherever they went. But, without troubling the reader with any farther enumeration of such instances, the following public advertisement, under the auspices of the Board of Health, will itself sufficiently exhibit the description of *obedience* which was exacted to the regulations of that body. I quote an extract from this advertisement, in the exact terms in which it was printed: viz.

“ ADVERTISEMENT.

“ Many of the inhabitants who *may be desirous* of taking every precaution against the scourge of plague, are unacquainted with the necessary measures which should be adopted:” here followed a number of recommendatory rules, and among others, to avoid eating *pork*, and concluded with observing, that “the chief of every family who *wishes* to adopt these precautions, must announce his *intention* to his dependants, who, not consenting to conform thereto under the apprehension of the rigorous punishments prescribed for the violation of the quarantine laws, will be allowed to quit the house.

“ *Board of Health, 12th May, 1813.*

“ J. THOMAS, President.”

Thus the grand punishment for violating any of the quarantine laws, was no more than that the delinquent should “be allowed to quit his house;” get the disease, of course, and carry it about to his neighbour! What despondent reflections must not such an appearance of blindness to our danger have been calculated to raise in the mind of any one duly apprised of the consequences? I confess I saw it with horror and impatience, which caused me to take pains in pointing out my sentiments freely, and with an earnestness, which, considering the manner in which the offer of my advice was received, nothing but a strict and conscientious sense of my duty could have prevailed with me to do.

I trust it will never be seriously attempted to impute to the Maltese any positive disposition to oppose the laws of the health department; for, in justice to these worthy and unoffending people, as far as my own experience has gone, I never witnessed so much truly christian patience, as they evinced in every instance of compliance with the restrictions imposed upon them; that is, after these restrictions did really come to them in the full shape and authority of law. But until an adequate sanction was provided to give the law the necessary efficacy, we cannot be surprised that the multitude, ignorant of their danger, should not have been, of their own accord, very rigid in the observance of any rules or regulations, which, from the manner of their being executed, it is possible they might have thought were not intended to be very religiously obeyed.

The following few remarks, the result of about half an hour's visit to the Maltese pest-hospital, on the 2d of June, may convey some faint idea of the sufferings and privations to which those labouring under this horrible disease were subjected. These miserable creatures lay within a very short distance of each other, five or six on the floor of the same room; 28 of them were attended by two convicts. They had no change of linen, and were therefore obliged to lie, either without shirts, or in their foul every-day clothes. As my object in requesting permission to visit this hospital was to obtain some useful knowledge of the disease, and its treatment, I was prepared with a series of interrogations to put to the medical men whom I accompanied thither. It will not be supposed that my curiosity was likely to be very satisfactorily gratified, when I was told that there was neither book nor register, of any description, in which the details of treatment, or any history of the cases were noted. The small rooms in which the sick lay not being purified and whitewashed before fresh cases were put into them, became, in consequence, mere hot-beds of fomites.

The report of a very respectable and intelligent practitioner, Mr. Saunders, late of the royal navy, who, like myself, was allowed to visit this hospital only once, on the ground that the patients might not be disturbed in their last moments, is as nearly as possible coincident with the above. This gentleman

farther states having seen both sexes lying in the torments of the disease, in the same apartment, and having asked likewise for some account of the medical treatment, was very little more fortunate than myself, being referred for his information to a piece of board exposed at the outside of the pest-house door, on one side of which was written in chalk the medicine for the day (*spiritus mindereri*), and on the other, the medicine for the night (the *theriaca*), without any regard to individual peculiarities, age, sex, temperament, habit, condition of the symptoms, or any other particular of the sufferers' state.

Those who have witnessed the scenes of misery occasioned by the disease among the poor class of Maltese, must the more devoutly render their thanksgiving to God for his merciful forbearance to themselves. Whole families have been literally swept off in the space of a few days; and when a sufferer escaped the common fate of his countrymen, it was but to witness the destruction of any little property he had been possessed of. Bereft perhaps of every relative, and every friend he held dear, his return to a desolated abode was all the consolation he had to compensate for the loss of every thing else which could render life desirable.

The proportion of recoveries among the Maltese has been variously stated, but I believe the most authentic account does not place it above one in ten, or thereabouts, on an average. At the beginning few or none escaped, but towards the wane of the distemper, the cases became fewer and milder.

Amidst this scene of calamity, it must afford very inexpressible gratification to know how few of our countrymen have fallen sacrifices to the disease, and that the army has been so far fortunately preserved. The inheritance of a sound constitution and difference in mode of living may probably have very much contributed to confer this greater degree of security. Every credit is certainly due to commanding officers, for their early attention to some of the most necessary precautions. The 14th regiment and artillery enjoyed peculiar advantages in the situation of their barracks, which shut them out completely from all possible communication with the population. The garrison battalion and De Roll's lost the most men; which can only be ascribed to their being placed in situations of greater

exposure. In all, our army has not hitherto lost above 20. I have not, however, seen the returns of the garrison battalion, since it has become a second time infected.

Before I conclude this paper, it is proper to observe, that the information I have collected from the native practitioners, is much more the result of their speculation than practice. Their treatment of the plague, according to every account I have received of it, is very simple and summary. With perhaps every inclination to pursue inquiry, and to assist their fellow-mortals, they had certainly but few facilities to encourage them in either the one or other of these offices. Patients were not placed under their care, in the greater number of instances, before the disease was advanced, and when the golden moments for rendering them any assistance had irrevocably passed. As there is no disease in which the maxim of *venienti occurrere morbo* is of such important application as in this, the consequences of delay in sending patients to the hospital must have been inevitable.

Not having myself any concern with the department of public health, it is not in my power to furnish any of the numerous public papers relating to the progress of the calamity. This task must therefore devolve upon those whose connexion with that department, or better opportunities, have procured access to these papers. It may, doubtless, be matter of much curiosity to peruse such documents; but from all I have myself seen and learnt, I do not flatter myself with much expectation, that the sum of our knowledge, either upon the nature of the disease, or the manner of treating it, is likely to derive from them any materially useful augmentation.

The deaths occasioned by plague in the several months, are as I have below copied them from the printed notices, viz.

Abstract of the number taken ill and dead of the Plague in Malta, 1813, as copied from the printed notice.

Month	Dates.	Died.	Sick.	Total Died.
April.	1	1		1
May.	3 7 12 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	3 2 1 3 1 2 8 10 6 5 4 3 4 4 5 10 7 10 16 15 16		109
Month	Dates.	Died.	Sick.	Total Died.
June	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	18 11 13 17 11 16 12 11 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30		804
Month	Dates.	Died.	Sick.	Total Died.
July.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	153 42 43 46 53 53 57 58 54 56 58 60 63 64 65 67 68 69 70 71 72 73 74 75 76 77 78 79 80		1596
Month	Dates.	Died.	Sick.	Total Died.
Aug.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	153 41 42 44 47 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75		1023
Month	Dates.	Died.	Sick.	Total Died.
Sep.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	126 32 33 35 38 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85		675
Month	Dates.	Died.	Sick.	Total Died.
Oct.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	116 111 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40		1411
				3348

The average deaths per day being now so very inconsiderable, I would indulge every hope, that a due perseverance in the necessary means of caution may soon finally put a period to our alarms. My only apprehensions arise from the negligence which may take place in the expurgation of infected houses, and the destruction of susceptible articles liable to retain the contagion.

*Observations on the Functions of the Brain; by SIR EVERARD HOME, Bart.**

[From the Transactions of the Royal Society of London for 1814. Part II.]

The various attempts (says Sir Everard) which have been made to procure accurate information respecting the functions that belong to individual portions of the human brain, having been attended with very little success, it has occurred to me, that, were anatomical surgeons to collect in one view all the appearances they had met with, in cases of injury to that organ, and the effects that such injuries produced upon its functions, a body of evidence might be formed, that would materially advance this highly important investigation.

Effects produced by an undue pressure of water upon the Brain.—Before I enter into the particular effects that take place when pressure is made upon the brain, by means of water, it is necessary to mention, that sudden pressure of any kind upon the cerebrum, takes away all sensibility, whether made upon the external surface through the medium of the dura mater, or upon the internal parts through the medium of the ventricles, and sensibility returns as soon as the unusual pressure is removed.

Faintness is the consequence of the pressure, to which the cerebrum has been accustomed, being suddenly taken off.

I am induced to believe that pressure, to a certain degree, uniformly kept up, is necessary for the performance of the healthy functions of the cerebrum; and any increase or diminu-

* The facts contained in this most curious paper, will tend to disturb some of the speculations of the craniologists, and they consequently merit the early attention of all our scientific and other inquisitive readers.

tion of this pressure puts a stop to them. It is asserted, that in addition to this pressure, the pulsatory motion of the blood in the arteries of the cerebrum is also necessary; but the late John Hunter, whose accuracy in a point of this kind is not to be doubted, retained his senses, although the heart had apparently ceased to act.

Although insensibility is the common effect of undue pressure upon the cerebrum, it appears, from what will be stated, that it is not a necessary consequence of undue pressure upon the cerebellum.

The facts which have been stated, appear to point out the use of the water in the ventricles of the brain, and they account for the great variety which is met with in the form and extent of the posterior cornua of the lateral ventricles, their size varying according to the quantity of water which is necessary to keep up the pressure required.

The size of the ventricles would appear to be very immaterial, since, even when they are increased so as to contain about six ale-pints, the functions of the brain are all carried on, and the growth of the body proceeds; but, after the skull is completely ossified, an increase of two or three ounces produces insensibility.

That the ventricles should admit of being increased to so great an extent, without any of the senses or faculties of the brain being destroyed, is in itself a curious fact, and of so much importance with respect to the physiology of the brain, that I shall detail the two following cases, which illustrate one another.

In the one, the accumulation of water proceeded, as it will appear, as far as it could go without materially impairing the organ; it then stopt, and the boy grew up, with all his faculties: in the other, the water continued to increase, the substance of the cerebrum was absorbed, and the faculties of the brain were destroyed.

A boy, at a month old, had so rapid an increase of the size of his head, as to evince an accumulation of water in the brain; and when he was five years old, the head was so large that the parents, judging from recollection, believe that it never after increased. It was so transparent, that when exposed to

the sun, the rays passed through it as they would through a horn lantern. He was unable to walk. At this age, he caught the natural small-pox, which was so violent as nearly to prove fatal. Upon his recovery, the head showed no disposition to increase, and the child, in all respects, began to improve, and for the first time learnt to walk. At fourteen, the skull appeared completely ossified. At nineteen years, the time I saw him, he was five feet six inches high; his head measured in circumference thirty-three and a half inches. He had grown in the course of the last year about two inches, which is more than he had usually done in any one year.

All the organs of sense are entire; savoury food is agreeable to his taste, but he is moderate in eating. His sight is good, but looking with attention at objects more than half an hour, appears to strain his eyes. His head is so heavy, that the muscles of the neck are unable to support it for many hours together: when he lies down, the head is supported by another person.

He sleeps with most ease on the right side, and the left side of the head appears to the eye to be rather the largest. In lying down, there is, what he describes to be, a momentary thrilling heat felt on the upper part of the brain, in the line of the longitudinal sinus. Lying on his back strains his eyes so much, that he cannot continue in that posture; stooping forwards, brings an oppression upon his eyes. The least weight in his hand, as a tea-cup, makes it tremble; all sudden noises jar his head, and produce giddiness. When he falls down, the jar renders him insensible; at one time this was the case for fifteen minutes, without being attended with any bad consequences. His head aches when exposed to heat. He has had no illness since the small-pox. His sleep is easily broken: he never dreams. He is fond of reading and writing; has a taste for poetry, and can repeat verses out of Cowper. His memory of common things is very good. He never expressed any attachment or passion for women. He is of a mild disposition; but when irritated, his whole frame is in a state of agitation, which, however, soon goes off.

In another boy, the enlargement of the head, was perceived at three months, and increased for three years, and then ap-

peared to be stationary; and the child, till that period, was sensible. The upper part of the skull from that time began to ossify, and in three years more there was only an irregular space at the fontanelle, and a small space between the two portions of the os frontis remaining open. The child continued sensible till three years old, and then became gradually less so; did not know what it did; heard sounds, but could not see. At six years old he died.

The child was three feet three inches high, the skull twenty-seven inches round; the water contained in the two lateral, and third ventricles was six ale-pints and a half in quantity. The cerebrum formed a thin case of medullary substance surrounding this cavity. The cerebellum was entire.

	lb.	oz.	dr.
The weight of the whole brain was - - -	2	3	1
The weight of the whole brain of a child between			
six and seven years - - - - -	2	12	0

The preceding facts explain satisfactorily that the cerebrum is made up of thin convolutions of medullary and cortical substance surrounding the two lateral ventricles; which are unfolded when the cavities of those ventricles are enlarged, and in this unfolded state, the functions belonging to this part of the organ can be carried on.

Although the quantity of water may be so much increased without material injury to the functions of the brain when the skull is not ossified; yet after that period, even a few ounces in the lateral ventricles has been known to produce so much undue pressure, as to bring on head-ache, general uneasiness, a sensation as if the head were too large, loss of spirits, convulsions, loss of memory of recent events, idiotism, insensibility, and death.

When the water, instead of being contained in the general cavities of the lateral ventricles, is principally confined to their posterior and anterior cornua, the effects sometimes are occasional constipation, pain in the bowels, and lower part of the belly. When accumulated in the third ventricle, without any increase in the lateral ones, distressing pain in the head, loss of speech, and insensibility have occurred. When accumulated in the ventricles of the brain, and also under the tuberculum

annulare, painful sensations in the stomach, bowels, lower belly, and across the legs, have been met with. When not only in the ventricles, but between the tunica arachnoides and pia mater, over the hemispheres, and also upon the tubercula quadrigemina, the apparent consequences in one case were depression of spirits, pain in the back of the head, and mania. When in the ventricles, and also between the tunica arachnoides and pia mater, and between the dura and pia mater, melancholy, imbecility, apoplexy, and paralysis of one side, have been the accompanying symptoms. When in the ventricles, where there has been an unusual vascularity of the dura mater, violent affections of the præcordia have occurred in the night during sleep, which have led to suicide. When between the dura and pia mater in considerable quantity, a state of melancholy and imbecility of mind has been met with.

Effects produced by concussion of the Brain.—Concussion of the brain produces delirium and coma; these symptoms go off, they sometimes in a few days return and prove fatal. In the torpid state commonly attendant upon any violent shake being given to the brain, the senses are so much impaired, that little information can be gained respecting the effects produced upon the internal organs. The bowels have been found under such circumstances to be acted on by aperient medicines with great difficulty.

Effects produced when the blood-vessels of the Brain are preternaturally dilated or diseased.—Sudden dilatation of the blood-vessels of the cerebrum, in consequence of exposure to the sun, is sometimes accompanied by delirium, loss of speech and the power of swallowing.

A dilated state of the veins of the cerebrum has been attended with head-aches, which are very severe when the body is placed in a horizontal posture.

When the smaller arteries of the cerebrum are preternaturally enlarged, while those of the cerebellum are not, delirium has taken place, followed by a fit resembling apoplexy, and a paralytic affection of one side.

An obstruction to the passage of the blood through the right internal carotid artery, was attended by a succession of slight apoplectic fits, unaccompanied by any paralytic affections.

An aneurismal enlargement of both the internal carotid arteries, to the size of marbles, projecting into the cavernous sinuses, was the only apparent cause of attacks of mania, with consciousness of being insane.

Effects produced by extravasated blood.—Blood in the lateral and third ventricles was attended by repeated fits of vomiting and coma. In the fourth ventricle, a fit which in twenty-four hours terminated in death; under the anterior lobes of the brain by hiccoughs and stupor; under the cerebellum, by convulsions of the neck and body, with drawing up of the feet without stupor; in the folds of the pia mater covering one hemisphere, by a paralytic affection of the opposite side, without any other symptom.

Blood in the folds of the pia mater over the posterior lobes of the brain, and serum in the cornua of both the lateral ventricles, were attended by giddiness, paralysis, straight objects appearing crooked, loss of memory, and at last idiotism. In the right thalamus nervi optici, extending into the lateral ventricles, by paralysis of the left side of the body, both eye-lids closed, the mouth drawn on one side, a perception of light with the right eye, but not with the left, succeeded by coma. Between the dura mater and skull covering the right hemisphere, by stupor, which went off on its removal; but taking off the pressure produced faintness for a few minutes.

Coagulable lymph spread over the union of the optic nerves, the pineal gland, and tuberculum annulare, was followed by permanent contraction of the muscles between the occiput and vertebræ of the neck, dilatation of the pupils, and a great degree of deafness. Serum under the cerebellum by restlessness, convulsions, incessant talking, at times incoherent, and the eyes became insensible to light.

Effects produced by the formation of Pus.—Pus in the cornu of the right lateral ventricle, was accompanied with delirium and convulsions. Under the tuberculum annulare, by vomiting and delirium. Under the dura mater covering the right hemisphere, by delirium succeeded by coma. Under the left parietal bone, by watchfulness, sickness, irregular pulse, clammy sweats, talking incessantly. These effects went off on its removal: the quantity a tea-spoonful.

Effects produced by depression, and thickening of different portions of the Skull.—Unusual pressure of the skull upon the middle lobe of the brain, was attended with pain in the stomach, torpor of the bowels, nausea, retching, pain between the shoulders, and in the feet. On the upper part of the hemisphere, want of sleep, head-ache, and stupor. Those effects went off upon its removal. On both of the anterior lobes of the brain, heaviness, loss of memory, depression of spirits, bordering on idiotism. On the anterior lobes of the brain, accompanied with water between the tunica arachnoides and pia mater, covering the superior part of the hemispheres, an apoplectic fit, heaviness, loss of memory, and a second apoplectic fit, which terminated in death. On the lower and lateral part of the left posterior lobe of the brain, uneasiness in the skin of the left cheek, extending along the chin, throat, and trachea, hissing noise in the ears, inability to speak the words the person wished to articulate, using others in their place, although conscious of doing so, and unable to correct it. Numbness in the arms and legs. These effects ceased on taking off the pressure. On the anterior lobes of the brain, both anteriorly and laterally, with thickening of the pia mater, spasms in the lower extremities, and total loss of memory, so that the person did not know what he had done a few hours before; although in other respects in health. On the lower and lateral portions of the anterior and middle lobes of the brain, head-aches, general wasting, irregularity in the action of the bowels; the feel of inability to swallow, and great distress in the act of swallowing, with great general irritability.

Effects of pressure from Tumours.—An hydatid imbedded in the substance of the right hemisphere of the brain, was attended with violent head-aches, and occasional fits similar to those of apoplexy. A tumour in the substance of the posterior lobe of the brain, was attended with derangement of the functions of the stomach and bowels, double vision, and afterwards loss of sight. A tumour pressing on the left hemisphere, settled melancholy, drowsiness after dinner, requiring being carried into the air, which took it off; but it returned on coming back to the table. A tumour in the fourth ventricle, epileptic fits, soreness in the throat, and great pain in the act of degluti-

tion. A tumour in the tuberculum annulare, and water in the ventricles, pain in the head, stumbling in walking, the mouth drawn on one side, loss of sight of one eye, although the pupils were not affected; dullness in hearing, difficulty of swallowing, so as to die starved, with all the mental faculties entire.

Effects of injury to the substance of the Brain.—A deep wound into the right anterior lobe of the brain, attended with inflammation and suppuration, produced no sensation whatever; the sense remained entire, and the person did not know that the head was injured.

The brain shooting out in the form of fungus, after the dura mater is wounded, has no effect upon any of the nerves, nor is it attended with sensation; but the inflamed pia mater gives great pain.

Loss of a portion of the medullary substance of the anterior lobe of the cerebrum, produced no symptoms. Loss of a portion of one of the hemispheres was attended with difficulty of swallowing for twenty-four hours, and slight delirium of short duration. Ulceration of the anterior lobe of the brain, as low as the anterior cornu of the lateral ventricle, but not communicating with it, paralysis of both arms.

In a case of a penetrating wound into the right hemisphere of the brain, with bone forced into its substance, while there was an opening for the discharge of matter, no effects were produced, except when the circulation was much increased, and then only head-ache and numbness in the left side.

Effects of alteration of structure in the Brain.—In a case in which the tuberculum annulare had undergone a change in its texture, and become so hard as with difficulty to be cut with a knife, a considerable quantity of earthy particles being intermixed with the medullary substance of the crura, and other parts of the cerebellum, and the cerebrum and upper part of the cerebellum unusually soft; the effects were, the boy had been an idiot from his birth, never walked, spoke, or understood what was said. Went often three days without food. At sixteen, when he died, was no bigger than a child three years old, except the head, which was as large as it is usually at twelve.

Effects of injury to the Medulla Spinalis.—Pressure upon

the medulla spinalis in the neck, by coagulated blood, produced paralytic affections of the arms and legs, all the functions of the internal organs were carried on for thirty-five days, but the urine and stools passed involuntarily.

Blood extravasated in the central part of the medulla in the neck, was attended with paralytic affection of the legs, but not of the arms.

In a case where the substance of the medulla was lacerated in the neck, there was paralysis in all the parts below the laceration; the lining of the œsophagus was so sensible, that solids could not be swallowed, on account of the pain they occasioned.

Where the medulla in the back was completely divided, there was momentary loss of sight, loss of memory for fifteen minutes, and permanent insensibility in all the lower parts of the body. The skin above the division of the spinal marrow perspired, that below did not. The wounded spinal marrow appeared to be extremely sensible.

Extract of a Report, presented to the French Institute on the 26th of Frimaire, in the year XIII. by Messrs. Guyton Morveau and Chaptal, on the Question whether the Manufactures which exhale a disagreeable odour can be injurious to health. Translated for the Eclectic Repertory, from the Bulletin of the Society for the Encouragement of National Industry. No. 116. February, 1814.

This important question, on which the minister of the interior consulted the first class of the Institute, essentially affects the prosperity of our manufactures. In order to effect a satisfactory solution, the committee have deemed it their duty to take a general view of the arts to which the strongest objections have been made. They have divided them into two classes: the first, comprehending all the arts, the operations of which discharge into the atmosphere, as the consequence of putrefaction or fermentation, certain gaseous emanations, which may be considered as disagreeable in smell, or dangerous in effect; such as the rotting flax and hemp, the making of

catgut, and starch, slaughter-houses, tan-yards, breweries, &c. The second class comprehends all those in which the artist, operating by the action of fire, disengages in the form of vapour or gas, various principles, which are more or less disagreeable to respiration, and which are reputed more or less injurious to health. In this class may be included the distillation of acids, of spirits, of animal matter, the gilding on metal, the preparations of lead, copper, mercury, &c.

The arts comprehended in the first class, in relation to the health of the community, deserve particular attention; because the emanations disengaged by fermentation and putrefaction, are really injurious to health in some cases and under particular circumstances. For instance, the process of rotting, carried on in stagnant waters or pools, infects the air and destroys the fish: the diseases occasioned by it are well known and described; hence wholesome regulations have directed in most places, that this operation should be conducted beyond the limits of the towns at a certain distance from every habitation; and in waters the fish of which do not constitute the food of the people.

The other operations performed on vegetables, or on certain products of vegetation, for obtaining fermented liquors, as in breweries, for extracting colours, as in the manufacture of turnsole, alga tinctoria, and indigo, or for depriving them of certain principles, as in the making of starch, paper, &c. are not of a character to excite any solicitude on the part of the magistrate. In all instances, the emanations arising from these articles in the state of fermentation, can only prove dangerous immediately near the vessels or apparatus; they cease to be so when mixed with the external air; hence a little precaution will obviate all danger. Moreover there is no danger to the inhabitants in the neighbourhood; the persons engaged in the works can alone be affected; accordingly, any regulations directing the removal of such works out of the towns, and at a distance from any dwellings, would prove at once unjust, vexatious, and ruinous to the arts, without remedying the evil incidental to their operations.

Some preparations extracted from animal substances often require the putrefaction of these substances, as in the making

of catgut; but more frequently the substances are liable to become putrid, by remaining too long in the factory, or by being exposed to too great a heat. This is particularly observable in dyeing cotton red, in which a large quantity of blood is employed. The effluvia exhaled from these putrid articles, extend to a great distance, and form, in the neighbourhood, an atmosphere very disagreeable to respiration. It is the duty of the police, to cause these substances to be frequently renewed, so as to prevent putrefaction, and to direct the observance of sufficient cleanliness in the factories, so that no putrid filth shall be collected from the animal substances which have been employed.

On this account, slaughter-houses may be considered nuisances, but not such as to require their being removed out of town, or collected in one place. A little attention on the part of the magistrate, so that butchers shall not throw out the blood and the offals of the animals they have killed, will fully prevent every thing offensive or unwholesome which the slaughter-houses might occasion.

The conversion of human ordure into a powder has been lately introduced in all the large towns of France; the process necessarily occasions, for a length of time, the evolution of a very disagreeable odour. Such establishments ought therefore to be formed in very airy situations and at a distance from all habitations.

A very important observation here presents on the spontaneous decomposition of animal substances; it is, that the emanations appear to be less dangerous in proportion as the articles which undergo putrefaction are less humid. In this case, a considerable quantity of carbonated ammonia is disengaged, imparting its predominant character to the volatilized matters, and correcting the bad effects, which might be deleterious.

Thus the decomposition of stercoraceous matter in the open air, and in situations where the inclination of the ground allows the fluids to run off, the decomposition of the remains of the cocoons of the silk worm, evolve an enormous quantity of carbonated ammonia, while the same substances immersed in water, or moistened with this fluid, exhale miasmata, faint, nauseous and dangerous to respiration.

The numerous arts in which the manufacturer produces and diffuses in the air, by the aid of fire, and as the consequence of his operations, vapours more or less disagreeable to respiration, constitute the second class of those remaining to be examined.

These are more interesting than the first, and much more intimately connected with the prosperity of national industry, and more frequently the subjects of indictments brought before the magistrate; and on this account, they merit a more particular attention.

The acids, the preparation of which may excite some complaints on the part of those living in the neighbourhood of the laboratory, are the sulphuric, the nitric, the muriatic, and acetic.

The sulphuric is obtained by the combustion of a mixture of sulphur and saltpetre. In this operation it is difficult to prevent an odour, more or less marked, of sulphurous acid, from being diffused round the apparatus where the combustion is carried on; but where the process is skilfully conducted, this odour is scarcely perceptible in the laboratory; it causes no danger to the workmen, who breathe it daily, and no complaint on the part of the neighbours can be well founded. When the manufacturing of sulphuric acid was introduced in France, the public opinion was strongly expressed against the first establishments. The odour produced by the burning of matches in our kitchens contributed not a little to magnify the effect that would be produced by the rapid combustion of some hundred weights of sulphur. At present these prejudices have subsided; and in the very hearts of our towns these manufactories are observed to flourish without the slightest inconvenience or molestation.

The distillation of nitric and muriatic acids occasions no more danger than the making of sulphuric acid. The whole operation is performed in vessels of glass, or stone ware; and it is unquestionably the interest of the manufacturer to diminish, as much as possible, the loss or volatilization. Notwithstanding every attention in the process, the air of the laboratory will be impregnated with the particular odour of each of these acids; nevertheless respiration is free, and perfectly safe.

The men who are constantly engaged in the works, are not incommoded, and the neighbours can have no right to complain.

Since the manufactories of white lead, verdigris, and the sugar of lead have been multiplied in France, vinegar has been more extensively employed.

When this acid is distilled to adapt it to some of these purposes, a very strong smell of vinegar is widely diffused, but unaccompanied by danger: when, however, a solution of lead in this acid is evaporated, the vapours partake of a sweetish character, and produce, on the persons who habitually breathe them, all the peculiar effects occasioned by the fumes of lead itself. Happily these effects are confined to the workmen engaged in the laboratories, and do not extend to the persons who live in the neighbourhood.

The preparations of mercury and lead, and those of copper, antimony, and arsenic, the process of gilding on metal, are all fraught with some danger to the persons inhabiting the laboratories, or assisting in the operations; but the effects are confined to the limits of the building; the workmen and manufacturers are alone exposed to any risk or danger. The means of preventing these ill effects are worth the attention of chemists, many of the inconveniences have been already obviated by the construction of flues, which conduct the vapours beyond the sphere of respiration; and, at present, the attention of the administration might be confined to directing science in the means of perfecting the processes, as far as they are susceptible, in regard to health.

The formation of Prussian blue, the extraction of the carbonate of ammonia by the distillation of animal substances in the new manufactories of sal ammoniac, produce a great quantity of fœtid vapours or exhalations: indeed these exhalations are not dangerous to health; yet, the proprietors of these establishments, when looking out for a situation, ought to prefer one at a distance from any habitation. But when the establishment is already formed, it will be sufficient if the proprietors are required to construct very high chimnies so as to dilute the disagreeable vapours produced in these operations. This mean is particularly practicable for Prussian blue.

Though the committee of the institute confined their atten-

tion to the principal manufactures against which violent clamours had been raised at various times, and in various places, yet we remark, from the preceding statement, that there are few which are injurious to the health of the neighbourhood.

Hence the magistrate ought to reject the ill founded complaints, which are too frequently directed against the establishments, menacing the fortune of the manufacturer, and retarding the progress of industry; he ought to be on his guard against the conduct of a jealous and troublesome neighbour: he ought carefully to distinguish what is inconvenient and disagreeable, from what is noxious or dangerous; in a word, he ought to be impressed with this truth, that in listening to complaints of this nature, the consequence would not only be, that the establishment of many useful arts would be prevented in France, but insensibly, the blacksmiths, carpenters, joiners, coppersmiths, coopers, brass-founders, weavers, and generally all those trades which more or less incommode the neighbours, would be excluded from our towns; for in fact the arts just mentioned annoy the neighbourhood more than those formerly noticed; and the only advantage they have over the latter, is the long time they have been followed. Their right of domicile has been confirmed by time, and the public necessity.

The committee are of opinion that the Institute ought to take advantage of this circumstance, to place the manufactories under the special protection of the government; and to publish, that the manufactories of acids, of sal ammoniac, of Prussian blue, of sugar of lead, of white lead, the slaughter-houses, the manufactories of starch, the brewhouses, the tan-yards, do not render the neighbourhood unhealthy, when they are well conducted.

The same cannot be said of the rotting of hemp, of the making of catgut, of the collections of ordure, and in general, of all those establishments where a large quantity of animal or vegetable matter is subjected to a moist putrefaction; in these instances, besides the disagreeable smell, there are disengaged miasmata, which are more or less noxious.

The manufactures alluded to, though not injurious to the health of the neighbourhood, ought not the less to be placed under the direction of the administration: to the proprietors

ought to be prescribed the measures the most proper for preventing the diffusion of the odours and smoke through the neighbourhood. This may be accomplished by an amelioration of the process, by the erection of high boundary walls, so that the vapour may not be spread to the adjoining houses; by improvements in the management of the fire, so that the smoke may be consumed or deposited in the long flues of the chimnies; by the observance of great cleanliness in the laboratories, so that no matter may putrefy, and that all the offals susceptible of fermentation may be deposited in deep sewers, and may not, in any way, incommode the neighbours.

The committee observe, that when it is proposed to form new establishments of Prussian blue, of sal ammoniac, tanneries, manufactories of starch, and in general of all manufactures producing vapours very disagreeable to the neighbours, or danger from the apprehensions of fire, or of explosions, it would be at once prudent and just to declare, that these establishments cannot be formed within the towns, or near any dwellings, without a special permission; and in case the proprietors have not complied with this indispensable condition, the removal of the establishment may be enjoined without the right of indemnity.

The result of this report is, first, that the manufactories of catgut, the collections of ordure, the establishments for rotting, and likewise all those where large quantities of vegetable and animal matter are collected and allowed to rot and putrefy, render the neighbourhood unhealthy. All these ought to be removed out of the cities, at a distance from any dwelling; secondly, that those manufactures in which disagreeable odours are disengaged by fire, as in the making of acids, Prussian blue, sal ammoniac, render the neighbourhood dangerous only from the want of caution; and that the attention of the police should be confined to the improvement of the processes, and the management of the fire, and to the observance of suitable cleanliness; thirdly, that it would be worthy of a good and wise administration, to pass ordinances prohibiting for the future, within the towns, or near any habitations, the establishment of all manufactures really disagreeable or dangerous to the neighbours, without previous permission. In this class may

be comprehended the conversion of ordure into powder, tanneries, the manufactories of starch, foundries, the manufactories of candles and soap, slaughter-houses, the collections of offals, the making of Prussian blue, of varnish, of glue, of sal ammoniac, potteries, &c.

On the Fracture of the Carpal extremity of the Radius. By
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Surgery in the Royal College of Surgeons in Ireland.

[From the Edinburgh Medical and Surgical Journal for April 1814.]

THE injury to which I wish to direct the attention of surgeons, has not, as far as I know, been described by any author; indeed the form of the carpal extremity of the radius would rather incline us to question its being liable to fracture. The absence of crepitus, and of the other common symptoms of fracture, together with the swelling which instantly arises in this, as in other injuries of the wrist, render the difficulty of ascertaining the real nature of the case very considerable.

This fracture takes place at about an inch and a half above the carpal extremity of the radius, and exhibits the following appearances.

The posterior surface of the limb presents a considerable deformity; for a depression is seen in the fore-arm, about an inch and a half above the end of this bone, while a considerable swelling occupies the wrist and metacarpus. Indeed, the carpus and base of the metacarpus appear to be thrown backward so much, as on first view to excite a suspicion that the carpus has been dislocated forward.

On viewing the anterior surface of the limb, we observe a considerable fulness, as if caused by the flexor tendons being thrown forwards. This fulness extends upwards to about one-third of the length of the fore-arm, and terminates below at the upper edge of the annular ligament of the wrist. The extremity of the ulna is seen projecting towards the palm and inner edge of the limb; the degree, however, in which this projection takes place, is different in different instances.

If the surgeon proceed to investigate the nature of this injury, he will find that the end of the ulna admits of being readily moved backwards and forwards.

On the posterior surface, he will discover by the touch that the swelling on the wrist, and metacarpus, is not caused entirely by an effusion among the softer parts; he will perceive that the ends of the metacarpal, and second row of carpal bones, form no small part of it. This, strengthening the suspicion which the first view of the case had excited, leads him to examine, in a more particular manner, the anterior part of the joint; but the want of that solid resistance, which a dislocation of the carpus forward must occasion, forces him to abandon this notion, and leaves him in a state of perplexing uncertainty as to the real nature of the injury. He will, therefore, endeavour to gain some information, by examining the bones of the fore-arm. The facility with which (as was before noticed,) the ulna can be moved backward and forward, does not furnish him with any useful hint. When he moves his fingers along the anterior surface of the radius, he finds it more full and prominent than is natural; a similar examination of the posterior surface of this bone, induces him to think that a depression is felt about an inch and a half above its carpal extremity. He now expects to find satisfactory proofs of a fracture of the radius at this spot. For this purpose, he attempts to move the broken pieces of the bone in opposite directions; but, although the patient is by this examination subjected to considerable pain, yet, neither crepitus nor a yielding of the bone at the seat of fracture, nor any other positive evidence of the existence of such an injury is thereby obtained. The patient complains of severe pain as often as an attempt is made to give to the limb the motions of pronation and supination.

If the surgeon lock his hand in that of the patient's, and make extension, even with a moderate force, he restores the limb to its natural form, but the distortion of the limb instantly returns on the extension being removed. Should the facility with which a moderate extension restores the limb to its form, induce the practitioner to treat this as a case of sprain, he will find, after a lapse of time sufficient for the removal of similar swellings, the deformity undiminished. Or, should he mistake

the case for a dislocation of the wrist, and attempt to retain the parts *in situ* by tight bandages and splints, the pain caused by the pressure on the back of the wrist will force him to unbind them in a few hours; and if they be applied more loosely, he will find, at the expiration of a few weeks, that the deformity still exists in its fullest extent, and that it is now no longer to be removed by making extension of the limb. By such mistakes the patient is doomed to endure for many months considerable lameness and stiffness of the limb, accompanied by severe pains on attempting to bend the hand and fingers. One consolation only remains, that the limb will at some remote period again enjoy perfect freedom in all its motions, and be completely exempt from pain: the deformity, however, will remain undiminished through life.

The unfavourable result of some of the first cases of this description which came under my care, forced me to investigate with peculiar anxiety the nature of the injury. But while the absence of crepitus and of the other usual symptoms of fracture rendered the diagnosis extremely difficult, a recollection of the superior strength and thickness of this part of the radius, joined to the mobility of its articulation with the carpus and ulna, rather inclined me to question the possibility of a fracture taking place at this part of the bone. At last, after many unsuccessful trials, I hit upon the following simple method of examination, by which I was enabled to ascertain, that the symptoms above enumerated actually arose from a fracture, seated about an inch and a half above the carpal extremity of the radius.

Let the surgeon apply the fingers of one hand to the seat of the suspected fracture, and locking the other hand in that of the patient, make a moderate extension, until he observes the limb restored to its natural form. As soon as this is effected, let him move the patient's hand backward and forward; and he will, at every such attempt, be sensible of a yielding of the fractured ends of the bone, and this to such a degree as must remove all doubt from his mind.

The nature of the injury once ascertained, it will be a very easy matter to explain the different phenomena attendant on it, and to point out a method of treatment which will prove com-

pletely successful. The hard swelling which appears on the back of the hand, is caused by the carpal surface of the radius, being directed slightly backwards instead of looking directly downwards. The carpus and metacarpus retaining their connections with this bone, must follow it in its derangements, and cause the convexity above alluded to. This change of direction in the articulating surface of the radius is caused by the tendons of the extensor muscles of the thumb, which pass along the posterior surface of the radius in sheaths firmly connected with the inferior extremity of this bone. The broken extremity of the radius being thus drawn backwards, causes the ulna to appear prominent toward the palmar surface, while it is possibly thrown more towards the inner or ulnar side of the limb, by the upper end of the fragment of the radius pressing against it in that direction. The separation of these two bones from each other is facilitated by a previous rupture of their capsular ligament; an event which may readily be occasioned by the violence of the injury. An effusion into the sheaths of the flexor tendons will account for that swelling which occupies the limb anteriorly.

It is obvious that, in the treatment of this fracture, our attention should be principally directed to guard against the carpal end of the radius being drawn backwards. For this purpose, while assistants hold the limb in a middle state between pronation and supination, let a thick and firm compress be applied transversely on the anterior surface of the limb, at the seat of fracture, taking care that it shall not press on the ulna; let this be bound on firmly with a roller, and then let a thin splint, formed to the shape of the arm, be applied to both its anterior and posterior surfaces. In cases where the end of the ulna has appeared much displaced, I have laid a very narrow wooden splint along the naked side of this bone. This latter splint, I now think, should be used in every instance, as, by pressing the extremity of the ulna against the side of the radius, it will tend to oppose the displacement of the fractured end of this bone. It is scarcely necessary to observe, that the two principal splints should be much more narrow at the wrist than those in general use, and should also extend to the roots of the fingers, spreading out so as to give a firm support to the hand. The

cases treated on this plan have all recovered without the smallest defect or deformity of the limb, in the ordinary time for the cure of fractures.

I cannot conclude these observations without remarking, that were my opinion to be drawn from those cases only which have occurred to me, I should consider this as by far the most common injury to which the wrist or carpal extremities of the radius and ulna are exposed. During the last three years, I have not met with a single instance of Desault's dislocation of the inferior end of the radius, while I have had opportunities of seeing a vast number of the fracture of the lower end of this bone.

Stephens Green, February 21, 1814.

SELECTED REVIEWS.

An Essay on the Venereal Diseases which have been confounded with Syphilis, and the Symptoms which exclusively arise from that Poison; illustrated by Drawings of the Cutaneous Eruptions of true Syphilis, and the resembling Disease. By RICHARD CARMICHAEL, M. R. I. A. President of the Royal College of Surgeons in Ireland, and one of the Surgeons of the Lock Hospital, Dublin. Part I. quarto, pp. 121, not accompanied by Drawings.

From the London New Medical and Physical Journal, for November and December, 1814.

EVERY surgeon, and every general practitioner, of any experience, must recollect, with regret and disappointment, the instances in which his skill and discrimination have been baffled by the Protean forms of a disease, which is considered by the host of *Routinists* as so uniform in its nature and appearance, as scarcely to require a moment's examination or thought, where *any* of the general symptoms are present.

In following the steps of Hunter, Abernethy, and a few other distinguished members of the profession, Mr. Carmichael comes before the public with strong claims on their attention, since, independently of his peculiar talent for discrimination, the field of practice, in which he is engaged, must furnish the most ordinary mind with an ample store of facts for the prosecution of the investigation under review. The Lock Hospital in Dublin is supported by Government, and contains nearly three hundred patients, attended by five surgeons, who have their allotted wards; but at the same time, access to the patients and practice of the whole hospital.

"The manner in which the investigation was prosecuted, (says Mr. C.) was on the most simple plan. Whenever a primary ulcer on the genitals occurred, which was destitute of the characteristics of chancre—the *hardened edge and base*, it was treated without the exhibition of mercury; and the same system was pursued in those cases of constitutional symptoms, which had a doubtful appearance.

"The scaly syphilitic blotch, as described in page 129 of Willan, and the excavated ulcer of the tonsils, as described in page 482 of Hunter, were alone esteemed to be syphilitic, and treated with mercury.

"As to the affection of the bones, whenever a patient complained of *nocturnal pains in the shafts of the long bones*, or *had a decided node or enlargement of the bone*, his disease was esteemed syphilitic, and the use of mercury adopted; but if the patient merely complained of pains in the joints, or if there was any indication that the coverings of the bone only were affected by an inflammatory swelling of a doubtful character, an occurrence which was not unfrequent, the employment of mercury was postponed, until the nature of the disease manifested itself by indubitable syphilitic appearances." v. vi.

The pseudo-syphilitic diseases were accurately noted before a numerous class of pupils, and their symptoms contrasted with those of true syphilis in the clinical lectures.

The first chapter of the work comprises Observations on those diseases; for instance, Yaws, Sivvens, &c. which have been confounded with syphilis; and historical researches, relative to the existence of *venereal* diseases, prior to the importation of *syphilis* from America. That the organs of generation have been occasionally affected with disorders resembling gonorrhœa and chancres, from time immemorial, was proved by Becket, Patin, Sanchez, Lombard, and many others before Astruc, who has embodied the evidences on this subject with considerable labour. That they were essentially different, however, from the trans-atlantic infection, is sufficiently obvious, from the circumstance of their either admitting of a natural cure, or of their giving way to medicines without any mercury, which is the reverse of what we know to be the case in real syphilitic affections. We shall, therefore, pass over this part of our author's work, and dwell more on the practical chapters, considering as much as possible the information therein contained, for the sake of those readers whose circumstances or situations debar them from access to valuable, but expensive publications. This is a consideration too generally neglected by the Reviewer, who fritters away a great proportion of his pages in idle declamation or useless hypercriticism,

without taking much pains to convey the results or practical deductions of his author, to the mind of his disappointed reader. We have been guided of late, by convictions of the importance of this procedure; and we pledge ourselves for a conscientious discharge of the task we thus impose upon ourselves—a task of more difficulty, and occasioning more labour, than is generally imagined; for it requires the most careful perusal of any work, to be able to give a concentrated view of its contents, *in the language of the Reviewer*, a sine qua non in the plan proposed, since long or frequent quotations are incompatible with the object in question.

Having, then, adduced sufficient testimonies, from the writings of ancients and moderns, of the existence of pseudo-syphilitic diseases, Mr. C. enters, in his second chapter, on “the local and constitutional symptoms of syphilis, mode of treatment, and action of mercury upon the system.”

He commences with recommending Mr. Hunter’s description or definition of chancre, to be engraven on the mind of every medical man, as he considers the “thickened edge and base,” and the *abrupt termination* of the hardness and thickening in the surrounding parts, to be diagnostics of great importance.

“Ulcers,” says he, “which are *not* syphilitic, may, but seldom have, a fullness and slight induration round the circumference;” but then the induration does not “terminate abruptly, but diffuses itself gradually and imperceptibly into the surrounding parts.” p. 25.—“The induration of a chancre is not confined to the edges only, but extends under the entire surface of the ulcer,” “which makes but slow progress, compared to those ulcers of the parts of generation, which are destitute of any surrounding induration, and particularly the phagedenic and sloughing ulcer.” p. 26.

In the next paragraph, however, there is some obscurity, that may lead to what we conceive to be a wrong treatment.

“In the treatment of chancre,” says Mr. C. “we should not desist from the exhibition of mercury, till the entire of the surrounding induration is absorbed. And when this is accomplished, if the system has felt the full influence of that mineral, the ulcer may be allowed to cicatrize. As soon as the

action of the poison is superseded, the parts will evince a disposition to heal, if not prevented by an indiscreet *perseverance* in the use of the remedy." *ib.*

Now we have observed, in no trifling field of practice, that when the induration is absorbed, and "the parts evince a disposition to heal," a *perseverance* will not prevent the completion of the cure; but, on the contrary, is necessary, till the sore is healed for some time.

If Mr. C. means an injudicious *administration* of the remedy, we can understand him; but the mere *perseverance* does not deserve the stigma conveyed in the foregoing paragraph.

A case is next introduced, to show the progress and appearance of chancre, when left to its natural march; and it is somewhat curious, that a periodical change of appearance is then perceptible. "Its livid surface is alternated every third or fourth day with that of a light brown or tawny colour." p. 27.

Mr. C. describes, with accuracy, the appearance of chancre, as it affects the body of the penis; and justly observes, that its dark, livid hue renders it liable to be confounded with, and mistaken for, a *sloughing ulcer*. The latter will be found, however, to want the hardened edge and base of chancre, and its progress will be infinitely more rapid than that of true syphilitic sores. Mr. C. considers phymosis and paraphymosis as less frequently attendants upon chancre than upon pseudo-syphilitic ulcers, and that they are ascribable to irritability of constitution, when they accompany the former complaint. Mr. C. wisely puts us on our guard, against the exhibition of mercury, when the inflammation is violent, and the penis considerably swollen and painful. On the contrary, he prescribes venesection from the arm, rest, cooling laxatives, and the strictest antiphlogistic regimen. He has not found *local* blood-letting so useful here as in other inflammations, "for if the matter which flows from beneath the prepuce, should come in contact with the wounds inflicted by the leeches, troublesome sores might ensue." p. 30. We lately had occasion to observe the violent inflammations produced by chancres on the body of the penis, among our soldiers and sailors in the South of France, in many cases of which we were unable to commence

the mercurial treatment for some weeks. Indeed, the symptoms were infinitely more severe, in almost every case of chancre which occurred in France, than under similar circumstances in England; and we are strongly disposed to acquiesce in the opinions lately delivered to the public by Dr. Fergusson, in the *Medico-Chirurgical Transactions*. Mr. Carmichael *conjoins* mercury with depletion.

"I early conceived," says he, "that active depletions might be conjoined with the use of mercury, in those cases of combined inflammation and chancre, with the view of subduing, in the most effectual manner, this dangerous combination of disease; and I adopted and pursued this practice with the most unvarying success." p. 30.

We have never considered the delay occasioned by the depletory measures, as of any consequence, and therefore deferred the mercurial treatment till the inflammatory symptoms had subsided; but we give implicit credence to the assertions of Mr. C. from our knowledge of the utility of mercury in inflammations of still more vital organs than the genitals; and we regret, that the dogmas of the schools have withheld us from pursuing the plan recommended by our author.

At page 46, Mr. C. adverts to a circumstance which we have often witnessed, viz. the formation of matter under the investing ligament of the penis, accompanied by enormous tension, pain, and induration. In these cases, as in deep seated paronychia, the only effectual mean of relief, is an incision through the resisting ligament, to give exit to the matter; otherwise, the worst consequences may ensue.

Knowing, as we do, the extreme difficulty of removing venereal warts, we gladly introduce the following remedy, upon such respectable authority as that of our author.

"The idea of applying *acetic acid** to warts, was first suggested by a knowledge of its extraordinary effect upon those well-known indurations of the cuticle, called corns, which it will remove, with certainty, in one or two applications; and if not carefully managed, all the surrounding cuticle which it happens to touch."—p. 37.

* Of The Dublin Pharmacopœia of course. R&V.

He only recommends the application to *large warts with broad bases*. The pendulous, with narrow necks, he advises to be removed with scissars, and a solution of lunar caustic applied to the raw surfaces, after the oozing of blood has ceased.

Mr. C. acknowledges the impossibility of distinguishing syphilitic buboes in the groin, from those that arise from other causes, except by a consideration of preceding circumstances. He does not believe, that syphilitic bubo can take place, without a previous chancre; and it is rather strange, that he expresses himself in the very words of Adams, when he says, he has never had cause to repent the omission of mercury in those cases.

Respecting the constitutional symptoms, Mr. C. informs us, that he has not in any one instance, observed the eruption on the skin to be "papular, pustular, or tubercular, when it arose from the true syphilitic primary ulcer; or to be *scaly* when it followed those ulcers which do not possess the true characters of chancre, the indurated edge and base."—p. 40.

Our author accords with Mr. Hunter's definition of syphilitic ulcer in the throat, viz.

"A fair loss of substance; part being dug out as it were from the body of the tonsil, with a determined edge, and is commonly foul, with thick white matter adhering to it, like a slough; which cannot be washed away." "He considers all ulcers, not agreeing with the above, to be at least doubtful, and requiring a strict examination of circumstances previous to the administration of mercury. In regard to nodes, he considers the *syphilitic* as a solid enlargement of the bone, unaccompanied at its commencement, or for some time afterwards, by any discoloration of the integuments; whereas, the pseudo-syphilitic nodes affect the periosteum and soft parts covering the bone, and not the bone itself; as there is, from the commencement, swelling and redness of the integuments, which rise suddenly, increase with rapidity, and frequently disappear as quickly as they arose, without the intervention of mercury."—p. 45.

"Syphilitic pains affect the centres of the long bones; pseudo-syphilitic more commonly affect the joints; but all have the nocturnal exacerbation. The secondary, or constitutional symptoms in the *soft parts*, experience a rapid amelioration

under the influence of mercury, and, in short, yield more readily than the primary or chancreous ulcerations."—p. 46.

Mr. C. considers it unnecessary, even in the most obstinate instances, where the bones are affected, to continue a full mercurial action longer than two months. "This period is more than sufficient to supersede the syphilitic action, if the course is managed with judgment."—ib. In this we cannot entirely coincide with our author, since we have found it necessary, with every care and attention, to continue a mercurial action for a longer period than that alluded to.—We entirely agree, however, with Mr. C. in the following sentence:

"Whatever be the quantity, [of mercury] it is necessary for the cure of syphilis to excite a strong mercurial action, and to make the constitution feel and suffer under the debilitating effects of the mineral. Alterative courses, as they are called, may suspend, but will seldom supersede the poison altogether."—p. 48.

We have but too many opportunities of witnessing the justness of the following remarks. Speaking of the mercurial phagedenic,

"These circumstances," says he, "are elucidated by the progress of ulcerated buboes, in which the mercurial phagedenic more frequently occurs, than in any other venereal ulcer, on account of the practice of opening them, while the system is mercurially affected. The crude wound inflicted by the lancet in opening them, if the system is affected with mercury, will immediately assume the mercurial phagedena, which will rapidly extend, although a sufficient quantity of mercury has not been exhibited, to supersede the mercurial irritation in the part. The same circumstances will occur in the suppurating sore made by caustic; and in either case, we have an instance of mercurial action in one portion, and of venereal action in another portion, of the same ulcer."—p. 49.

Mr. C. found that females were more easily brought under the influence of mercury than males, and, therefore, it is his practice to commence with half a drachm of the ointment every night; whereas, a drachm may be employed on the more robust sex. It must be recollected, however, that the mercurial atmosphere of a Lock Hospital has a considerable effect on a pa-

tient, and particularly a debilitated female. Mr. C. justly observes, that

"When a patient, whether male or female, has been salivated several times, and the system thereby habituated to mercury, it is incredible the small quantity of that mineral, that is sometimes capable of exciting the severest effects."—p. 52.

Our author warns us against a perseverance in a mercurial course, in broken constitutions, where oedematous swellings of the legs have begun to manifest themselves, as ascites and hydrothorax have often rapidly come on in consequence. Country air, generous diet, and regulated exercise are the best remedies in these distressing cases, omitting entirely the administration of mercury till the constitution is renovated.

In cases where dropsy has actually taken place,

"Nitrous acid, given in as large quantities as the stomach and bowels can bear, conjoined with digitalis, is of the greatest service."—p. 53.

Cases illustrative of these remarks, are adduced by our author, from page 53 to 58.

In the third chapter the grand subject of the work is entered upon, viz. first class of primary diseases, which have been confounded with syphilis. This class comprises four species,

"1st. Superficial ulcers without induration, but with elevated edges. 2d. Similar ulcers without induration or elevated edges. 3d. An excoriation of the glans and prepuce, attended with purulent discharge. 4th. Gonorrhœa virulenta."

The constitutional symptoms arising from these affections are alike in all. In the 2d class, Mr. C. places the phagedenic and sloughing ulcers, the constitutional symptoms of which are materially different from those of the first class. Mr. C. thinks, that at least five cases of these pseudo-syphilitic complaints occur for one of a true venereal character.

In the treatment of the first species of ulcers, our author places his chief reliance in the constant application of astringent washes; viz. one grain of muriate of mercury to an ounce of lime water. Buboes sometimes arise from this species, and are obstinate. Mr. C. treats them with decoction of sarsaparilla and antimonials; in illustration of which treatment, some cases are inserted from page 63 to 67.

The second species of ulcer is the most frequent of any, is raised above the surrounding skin, and exhibits a smooth surface. It often occasions phymosis, and is cured by the same lotion as the former, conjoined with decoctum sarsæ and antimonials. We shall subjoin a case as an example.

"William Lucas, October 26, 1813. There was an ulcer, the size of half a crown, situated on the prepuce; it was superficial, smooth, and without induration. The prepuce was considerably swelled, and he was affected with ardor urinæ, and gonorrhœa. He stated, that he was three weeks disordered, and had not used mercury. The antimonial solution was ordered to be taken, and poultices of bread and water to be applied.

"On the 2d of November, the swelling and pain were removed; and he was desired to inject frequently, into the urethra, a lotion, composed of two grains of muriate of mercury to eight ounces of lime water, and to keep dossils of lint, moistened in the same application, to the ulcer. 15th, The ulcer was healing, and the discharge and ardor urinæ were entirely removed.

"November 29, The ulcer was healed, but he remained in the hospital till the sixth of December, when he was discharged well."—p. 70.

The third species, viz. Excoriation, need not detain us, as few would apply mercury on such occasions, or be mistaken in the nature of the complaint. Mr. C. uses the same external applications as in the former cases.

The fourth species, Gonorrhœa Virulenta, is considered by our author, as we believe it is by most modern surgeons, to be produced by a poison totally different from that of syphilis. Mr. C. endeavours to solve the difficulty, and set at rest the long agitated question, by supposing that excoriations and gonorrhœa are the result of the same poison, since the constitutional as well as the local effects are the same, and since the one frequently gives rise to the other.

"In regard to the treatment of gonorrhœa on the plan I have recommended, it may be necessary to mention, that if the inflammation should be considerable, and the ardor urinæ severe, it might be improper to employ any injection, as even the point of the syringe will, in some cases, excite irritation;

but there are few instances of gonorrhœa, even in the first stage, in which the injections I have recommended [muriate or submuriate of mercury and lime water] will not effectually ease the ardor urinæ, lessen the discharge, and in a very short time remove the disease altogether."—p. 78.

Mr. C. acknowledges the inefficacy of those injections composed of the acetates of lead and sulphates of zinc, which we have found useless, if not prejudicial. We agree with him, however, that strictures in the urethra are often placed to the account of injections, when they were produced by gonorrhœa itself.

Having thus given a pretty full view of our author's observations on the first class of pseudo-syphilitic affections, we shall defer the consideration of the "Constitutional symptoms" till our next number; in the mean time it will be sufficiently evident, even in this early stage of the Review, that we consider the work before us of no ordinary merit; and that its author is likely to enhance the high reputation which the School of Surgery has already obtained in the sister island.

If it be true, that "a great book is a great evil," it may also be acknowledged, that a good book is a real blessing; particularly at these times, when the weeds of medical literature threaten to overwhelm the useful grain by their rank luxuriance. When from the apothecary's apprentice, who can scarcely get behind his own counter, before he commences author, and dispenses his pharmaceutical or physiological *learning* for the good of society and the edification of the profession, up to the metropolitan doctor, who puffs himself into notice by the extraordinary cures which he performs on incurable diseases, all ranks are infected with the *cacoethes scribendi*, and all are pouring through the groaning press their crude and self-interested lucubrations on a disgusted public! In such times, it need not excite surprise, if the ill-fated critic protracts, as long as possible, the hour of separation from a work of genuine merit, and lingers through an *Oasis* with tardy steps, when the greater part of his journey lies through the sterile tracts of literature.

The more we have examined the work before us, the more

we have compared it with past and present experience, the higher in our estimation does the author of it stand, and the more conscientiously do we recommend it to the perusal of the faculty.

All the higher classes of the profession will consult the work in its original; and we shall endeavour to disseminate its information still farther, by bringing a condensed portrait of the subject and outline of the practice, within the reach of those who must depend on the sources of periodical publication for recent improvements or discoveries in the profession.

"The CONSTITUTIONAL SYMPTOMS, says Mr. C. which arise from the superficial ulcer that is *without elevated or indurated edges*, and the constitutional symptoms which are derived from the *excoriation of the glans and prepuce, attended with purulent discharge*, and from *gonorrhoea virulenta*, I have already stated to be alike in all those complaints. They consist of more or less fever, which ushers in a *papular eruption*, inflammation, and soreness of the fauces, attended with difficulty of swallowing; severe pains, which affect the head and larger joints, and sometimes inflammatory swellings over the superficial bones, which many would distinguish by the name of Nodes."—p. 81.

Our author asserts, that these disorders, in all their stages, differ as widely from the secondary symptoms of real syphilis, as the primary affections do from the primary symptoms of true venereal. He observes, that the fever which ushers in the eruption is, in general, strongly marked, and attended with quick pulse, white tongue, and severe pain in the head, shoulders, hips, knees and ancles. To these, some anomalous symptoms are added in a very few individuals.

"The fever does not subside on the appearance of the eruption, though it is at its height just previous to that event; it exists as long as fresh crops of the eruption continue successively to appear, and is usually accompanied with pains of the several joints, which are most severe at night."—p. 82.

Mr. C. remarks, that in every instance except two, where there was eruption, it was of the *papular* form and genus lichen, or as Willan defines it—"an extensive eruption of papulae, connected with internal disorder, usually terminating in scurf,

recurrent, not contagious." These varied in appearance, from a pale red to a deep crimson, some merely pimples, others almost advanced to the pustular form. The time of the appearance of this eruption after infection, varies much, as in syphilis; in a few cases, Mr. C. observed it take place in four or five weeks after infection. The papulæ, which, in general, are most numerous on the face, back, and belly, do *not* make their appearance together, but in succession.

"Their colour, in the latter stages, becomes paler, and assumes a copper tint, while the exfoliation of the cuticle gives an appearance of scabiness, an appearance which is most liable to be confounded with the scaly eruption of syphilis. But the very appearance of the declining papulæ, will, to a discriminating eye, be sufficient for this purpose; for its copper-coloured scaly surface is *more raised in the centre than its circumference*, while the reverse is the case in the scaly leprous eruption of syphilis."—p. 83.

In all cutaneous diseases, as Dr. Bateman has observed, there is a tendency to affections of the throat and eyes; so in the complaint under consideration, soreness of the throat is one of its most frequent constitutional attendants. It is widely different, however, from the *excavated* ulceration of the tonsil, in syphilis, where difficulty of deglutition is seldom complained of. Here the patient suffers considerable pain and difficulty of swallowing; and on examination, the whole of the fauces, but particularly the back part of the pharynx, will exhibit a raw, inflamed, and excoriated appearance, covered with a whitish, slimy, adhesive matter.—p. 84.

In those swellings over the tibia, which might be mistaken for nodes, there was more of an inflammatory character, and the coverings of the bone only were affected. They were also sudden in their appearance.

"The eruption, after having entirely declined, will return again and again, at uncertain intervals of from one to several weeks; each successive crop, however, being less than the former, and attended with less constitutional derangement. The intervals between those attacks are also greater, as the disease exhausts itself, or yields to the powers of the constitution. But if the progress of the disease has been interrupted by mercury,

before it has arrived at its latter stages, it becomes more obstinate and complicated than it otherwise would have been."

If mercury is exhibited during the inflammatory stage, where there are severe pains of the joints, that require venesection and antiphlogistic measures, the patient is generally rendered much worse, and the pains are increased. If, however, the exhibition of mercury is postponed till the eruption has begun to decline, it will, in most instances, disappear under its use, and the pains, though not removed, will be alleviated thereby. After this, another crop of pustules, with sore throat, &c. will succeed, but in a milder degree, till the disease wears itself out.

"My mode of treating the constitutional symptoms of those disorders, is, with little variation, the same as that employed for the primary symptoms. If, however, the fever is considerable, as was frequently the case, the pulse being often upwards of 100, full, and strong, with furred tongue, attended with severe pain of the joints, I never hesitate to order blood-letting to twelve or sixteen ounces; and I seldom fail to find that this measure is attended with the same benefit as would follow its adoption in acute rheumatism. The blood appears highly buffed; the pains are considerably mitigated, but a repetition of the venesection is frequently required. It will also be necessary to pay attention to the state of the bowels, and endeavour, by means of antimonials, to promote perspiration, and lessen the increased arterial action of the system. When the febrile symptoms are reduced, I combine the simple or compound decoction of sarsaparilla with antimonials. Although I seldom or never exhibit mercury in those diseases, yet I would not altogether decline its use; but it should only be adopted at a time, when the disease has nearly exhausted itself. The mercurial salts, in alterative doses, in conjunction with sarsaparilla, are to be preferred to frictions."—p. 86, 87.

Our author sums up the general treatment of these disorders in the following words.

First, to moderate the action of the system, if the fever, which attends and accompanies the eruption, should be violent. Second, after the fever is subdued, to promote the secretions, and strengthen the system by vegetable tonics (such as sarsaparilla, &c.) and nutritious aliment, taken in proportion to the

digestive powers of the patient; warm clothing, moderate exercise, and a pure atmosphere. Third, when the eruption has declined, but the patient still complains of lingering pains in his head, elbows, hips, or knees, and it appears that the disease is nearly exhausted, it may be subdued altogether, by alterative doses of some of the mercurial salts, conjoined with the vegetable decoctions, without interdicting the patient from the advantage of enjoying exercise in the open air."—p. 87.

We shall now quote two or three cases illustrative of the foregoing observations; and first, a case of constitutional symptoms, arising from "*the superficial ulcer without induration or elevated edges.*"

"Patrick M'Guinness, admitted January 7, 1812, on account of a small superficial ulcer on the prepuce, without any surrounding induration, and a large tumour in the right groin containing matter. He stated, that the ulcer appeared three weeks before his admission, and the tumour of the groin a week after the ulcer. I put him on the use of nitrous acid, and directed him to poultice his groin.

"January 25th. The ulcer of the prepuce had healed; the bubo had ulcerated; and the enlarged gland was projected through an opening in the skin, forming an ulcerated tumour of considerable size.

"Feb. 6. A thick eruption of small papulæ, of a dark red colour, and similar in all respects to those represented in plate ii, fig. 6, had appeared on his face, neck, and shoulders, attended with considerable fever, and severe pains in his shoulders, elbows, knees, and ancles. He also complained of soreness in his throat, and difficulty of swallowing. On examination there was not any ulcer, but a general inflammation of the fauces, and a peculiar raw and excoriated appearance of the back of the pharynx. He was directed to discontinue the nitrous acid, and to take the antimonial solution.

Feb. 22. The eruption continued; many of the spots, after forming minute pustules in their acuminate tops, had declined in exfoliation of the cuticle, while fresh papulæ, at the same time, appeared in other parts. He complained of the severity of the pains, particularly in his knees, which shot along the muscles of his legs, but he did not complain of any pain affect-

ing the tibia. His pulse was 112, with considerable thirst and restlessness. I directed that twelve ounces of blood should be taken from his arm, and the antimonial solution continued. The blood taken was buffed and cupped, and he felt considerably relieved after this depletion.

"On the 1st of March, he was directed to take decoction of sarsaparilla, in conjunction with the antimonial solution, the febrile symptoms having nearly subsided. Before the 8th, the eruption had every where declined; and in some places, disappeared. He still complained of the pains in his joints, which, however, were considerably alleviated. As a remedy for these, I directed fifteen grains of the pulv. ipecac. comp.; the decoction to be continued, and the tepid bath to be daily employed. Under this plan, his pains were soon removed, and the eruption disappeared, leaving the skin discoloured with indistinct red marks; the ulcer of his groin had also healed, and he was discharged the hospital on the 15th of March, apparently well.

"On the 1st of May, he again returned to the hospital, complaining of severe pains in his joints, and an eruption of papulæ on his arms. His pulse was 110, with thirst and general fever. He stated, that since he left the hospital, he was exposed to the inclemency of the weather, and that he had been affected with three several crops of the eruption, accompanied with pains resembling those of rheumatism. I directed that he should be bled to sixteen ounces, and that he should take the antimonial solution. The blood taken from his arm was thickly buffed. His pulse was next day reduced to 90, and the pains considerably alleviated.

"10th. The eruption had declined, and there had not appeared any fresh spots. He stated, that his hair was falling off, a circumstance that was noticed fifty or sixty years after the introduction of syphilis, as a new symptom of that disease. Yet this certainly was *not* syphilitic.

"17th. His ancles were swelled and painful, and as I conceived that the influence of this morbid poison was nearly exhausted, I did not hesitate to order alterative doses of calomel, which I combined with antimonial powder. Of those medicines, he took, in the form of pills, half a grain of calomel and three grains of antimonial powder, three times a day.

Under this plan, his pains were relieved, and his complaints to all appearance removed, and he was discharged the hospital on the 7th of June, with an injunction to return, if he should again suffer any relapse of his disorder; but he has not since returned."—p. 90.

The following case of constitutional symptoms, arising from "*excoriation of the glans and prepuce, attended with purulent discharge, and frequently with gonorrhœa,*" will conclude our review of Mr. Carmichael's work, so far at least as is published.

"Thomas Trainer, admitted December 23, 1812. His complaints were phymosis and purulent discharge from the glans and prepuce, an ulcerated bubo in the right groin, and an incipient bubo in the other. There was also considerable swelling and thickening of the scrotum, but the testicles were of their natural size. He stated, that he was four months disordered, and that the first symptom with which he was affected was gonorrhœa, and that the other complaints shortly afterwards succeeded. I directed the antimonial solution, and the lotion of calomel and lime water.

"28th. The discharge and swelling of the penis were entirely removed; on retracting the prepuce, the parts were free from ulceration. The ulcerated bubo was healing, and that of the other was declining fast. The swelling and thickening of the scrotum was also considerably lessened. He complained, however, of severe pains in his joints, particularly at night.

"January 12, 1813. The swelling of the scrotum had again increased, and he complained of soreness in the throat. On examination, the back of the pharynx appeared raw and excoriated; and the velum and uvula swelled and relaxed. I directed the decoction of sarsaparilla, in conjunction with the antimonial solution.

"15th. An eruption of papulæ broke out all over his body, attended with high fever, pain in his chest, and difficulty of breathing. The scrotum and penis were very much swelled, and the prepuce so much swollen, as to resemble a bladder of water. The soreness of his throat was increased, and the pains of his joints had become more severe. I directed that he should be bled to sixteen ounces, and the antimonial solution to

be continued without the sarsaparilla. On the following day, his fever seemed considerably diminished, and his breathing was free. There appeared numerous small ulcers on the scrotum, which were probably the papulæ altered in appearance by the friction." From this time he convalesced, and recovered rapidly.—p. 102.

The plates to both parts will accompany the second part, and their loss is felt by the readers of what is already published.

To Mr. Carmichael we offer our thanks, for the pleasure and instruction his volume has afforded us, and we shall be happy to peruse the remainder of his work, and contribute to the dissemination of its practical information.

Elements of Medical Jurisprudence; or a succinct and compendious Description of such Tokens in the Human Body as are requisite to determine the judgment of a Coroner, and Courts of Law, in Cases of Divorce, Rape, Murder, &c. To which are added Directions for preserving the Public Health. By SAMUEL FARR, M. D. 12mo. pp. 139. 1814.

[From the London Medical and Physical Journal, for October 1814.]

The title of this little volume sufficiently proclaims its object: and we hope its appearance may excite in the practitioner an attention to a most important and much neglected study. Whether we look upon the science of medical jurisprudence in its connection with the actual practice of medicine, or as one of the accomplishments of medical education, without which it cannot be said to be complete; it will be found highly deserving of our regard; but in the former point of view alone, it is a duty imperative on the practitioner to make himself acquainted with it to its fullest extent. The physician or surgeon is often called upon to make depositions in courts of justice respecting the cause of death under particular circumstances: should he err on one side, the existence of a fellow-creature may be forfeited through his ignorance; by a mistake on the other, the guilty may be absolved, and the purposes of justice defeated. How mortifying the situation of the practitioner,

who, called as a witness on a trial, is unable to explain what is required of him, or delivers his evidence contrary to the dictates of science! Exposed to the buffetings of hostile counsel, his stupidity is soon brought to light; he retires an object of derision with the whole court, with a stain upon his character that the grave will scarcely efface! Setting aside, however, the personal interest we have in an intimate acquaintance with this science, can no case arise in which life may be endangered by our ignorance of it? We fear many such instances could be found: one occurred within our own recollection, where an individual narrowly escaped being hanged upon the testimony of *several* medical men of eminence in Liverpool; and certainly would have paid the forfeit of his life, had it not been for the providential and unexpected interference of Dr. Carson, of the same place.

As no arguments we can adduce can have so much weight as this solitary fact, we shall call the attention of our readers to the particulars of the case; to which we shall subjoin another, which occurred in our own private practice, which strikingly proves the correctness of Dr. Carson's reasoning upon this subject.

A Mr. Angus, of Liverpool, was indicted for the murder of Miss Burns, a young woman with whom he lived in habits of stricter intimacy than prudence or modesty could justify. She became pregnant, miscarried, and died in a few days. The concealment of the delivery, and subsequent death, induced a suspicion that abortion had been produced by means of poison: and unhappily, on examining the body, *an opening or supposed ulceration was discovered in the posterior part of the stomach*, which was pronounced by gentlemen of eminence to be capable of explanation in no way but on the supposition of poison having been administered. Marks of inflammation were seen on the peritoneum, small intestines, *and also on the peritoneal covering of the uterus*; which last, being of the size of a bullock's heart, left no doubt of the very recent delivery of the deceased. By some unlucky fatality, the inflammation of the uterus excited no suspicion that all the mischiefs which terminated in death had there begun; upon the evidence of these gentlemen the unfortunate man was committed to goal, on sus-

picion of being the perpetrator of this atrocious deed; and, after an imprisonment of six months, was arraigned for the murder. When the trial came on, it should be mentioned, to the honour of Dr. Carson, that he alone stood forward and maintained, in opposition to his brethren, that the appearance of the stomach could be accounted for by the known fact of the occasional digestion of that viscus by the action of the gastric juice after death. And to this conflicting testimony of men of equal reputation, Mr. Angus was indebted for the preservation of his existence.

We should be sorry that any remarks of ours could merit the imputation of personality; but we are constrained to observe, that the evidence, levelled at this unfortunate man's life, was given in opposition to facts which ought to have been notorious to every one. If the instances of digested stomach, related by John Hunter,* were in the estimation of these mistaken witnesses not sufficiently analogous with the appearances of that viscus in the case of Miss Burns to warrant the entire exculpation of the prisoner, in a matter of such serious importance, the *great* uncertainty of all medical reasoning should have induced them to *admit that uncertainty* in giving their testimony against him. Each party used Mr. Hunter's words to prove the fallacy of the other's reasoning; but neither seemed perfectly to understand him. Dr. Carson, by continually keeping alive the question concerning the stomach, contrived to keep that of the uterus out of sight. But his opponents were so little prepared for his objections, that they never could rally with sufficient firmness to direct the whole attention of the court to the state of the uterus.†

Without examining the question of the prisoner's criminality in having procured the abortion, we cannot entertain a doubt that the supposed ulceration of the stomach could not have been produced by the direct action of poison. If, from future observation, a connexion between inflammation of the abdominal viscera and the digested state of the stomach be shown

* This subject has been admirably illustrated by Dr. Adams, in his Essay on Morbid Poisons.

† For a most important investigation of this case, see our 21st volume, page 336.

to exist, it may then become a consideration whether the inflammatory symptoms were produced by the operation of poison, or the delivery itself, under all the disadvantages attendant on its concealment. That the ulceration was quite independent of poison, we think will be satisfactorily proved by the following case.*

Thyrsa Binden, aged twenty-six, residing at No. 43, Great St. Andrew-street, was delivered of a male child, after a natural labour of six hours. Until the fifth day of her confinement she was as well as under ordinary circumstances, when she began to complain of pains in the abdomen. A neighbouring apothecary was employed, who considered the symptoms to be common colic; but thought so lightly of them, that he merely ordered a common fomentation, and gave a powder, supposed to be an antimonial preparation. On the third day from this attack, the pains having increased to an insupportable degree, another apothecary was sent for, who recommended an accoucheur to be consulted, when Mr. Clarke was called in, who ordered a large quantity of blood to be drawn from the arm. It was immediately done. In the evening the symptoms were evidently increasing, though at first relieved by the bleeding. We were now sent for. She complained of the most excruciating pain of the abdomen, with inability to sit in an erect posture. The surface of the body was so exquisitely tender, that the slightest pressure could not be borne, nor could she move herself without the most alarming increase of her sufferings. Her skin was hot, she had intense thirst, the pulse was full, quick, and undulating, and the tongue was covered with a whitish fur. She had taken a solution of sulphate of magnesia in mint-water, which had procured the necessary evacuations from the bowels.

Here was no time to be lost; and, well knowing the liberality of our predecessor, Mr. Clarke, we ventured to wave the etiquette of the profession, which made it proper for us to consult with him, previous to prescribing in this case. Thirty ounces of blood were ordered to be taken, and the abdomen to

* Mr. Want thinks it proper to acknowledge himself to be the writer of this article, that the public may judge how far the authenticity of the case may be relied on.

be kept constantly wet with cloths dipped in vinegar and water. No internal medicine was administered. In the early part of the night she was relieved; the lotion appeared to be serviceable while applied, but, from an unlucky though natural fear of checking the discharges which are peculiar to the puerperal state, they were laid aside, and no permanent benefit was experienced. The symptoms recurred in the night with their usual violence: on the following morning the bleeding was repeated, and the nurse being convinced of the necessity of reapplying the lotion, it was done. About noon she was evidently relieved. Mr. Clarke met us in consultation, and it was agreed to continue our present plan. In the evening she was free from pain; the lotion had been kept constantly applied; she spoke of it as being peculiarly grateful to her, and believed it in a great degree to have been instrumental in procuring the ease she experienced. She was now sanguine in her expectations of recovery; but there was a fixedness and anxiety in her countenance which left us little to hope. The breathing became so laborious as to render it necessary to support her in an erect position by pillows. In the morning the pulse became weaker; convulsive twitches of the tendons supervened; she was evidently sinking, and in the evening she died.

It should have been remarked, that no vomiting had taken place during any part of her illness. With some little difficulty we obtained permission to inspect the body after death. On dissection, marks of high inflammation were evident in the peritoneum and the external coats of the intestines, which were slightly connected together by a gelatinous substance, but were easily separable; the surface of the intestines were covered by pus, a large quantity of which was found in flakes floating in about a pint of fluid effused into the cavity of the abdomen; water was found in the chest and pericardium; but the appearances most important for our purpose, were those which presented themselves in the stomach: *the posterior part of that viscus was completely eroded, and the contents effused into the abdomen immediately behind it.* Patches of inflammation were also found both on its internal and external surfaces. The uterus was inflamed, and had not yet contracted to its natural size.

The slightest comparison of this case with that of Miss Burns, as related in evidence upon the trial, will abundantly satisfy the reader of their being as similar as two cases in different constitutions of body can well be supposed to be; both young women, dying within a few days after delivery, with symptoms of peritoneal inflammation, and both with *digested stomachs after death*.*

In one respect only they differ; in our case, which was open to the inspection of the whole world, no possible suspicion of poison could exist. In the other, probably the concealment of the delivery gave rise to the suspicion. Let us hence learn the danger of stepping aside from the abstract question presented to our decision, with the hope of obtaining assistance from collateral evidence, which is at best to be suspected, and certainly ought never to influence the judgment of the practitioner.

With regard to the merit of the publication before us, although it is calculated to impart much instruction to the uninformed reader, we cannot allow it to possess that degree of perfection which the present state of science would entitle us to expect; in many places it contains sentiments evidently erroneous, especially where the grounds of divorce are discussed; and the important question of the digestion of the stomach is left entirely unnoticed. We are happy to be enabled to add, that some recent arrangements at the Windmill-street Theatre may be the means of directing the attention of students in medicine to the study of this interesting science, as Dr. Richard Harrison has announced his intention of delivering a full course of lectures upon it.

The contents of this Epitome are arranged under nine heads:—Pregnancy—Parturition—Divorces—Rape—Murder of Infants—Homicide—Idiotism and Insanity—Impostors—means of preserving Public Health. As the work is in itself much condensed, and scarcely capable of abbreviation, we shall, for the purpose of showing the nature of its execution, make some selections from three of these chapters.

* These may be regarded as very important facts in pathology, and may lead us more closely to investigate the seeming connection between the inflammatory symptoms and the state of the stomach. But we dare not dwell upon this, as it is foreign to our present subject.

"When the word parturition relates to the child itself, it may denote the time when it is born, the conformation of its parts, or the external figure which it presents, the state of its life, and the number which are brought into the world.

"When it relates to the time in which it is born, it may be considered either as perfect or mature, or immature and imperfect. The former, when gestation has been carried on at least nine months: the latter, when it is completed before that time; and in this last case, another division may be made into abortions, where the delivery is made before the seventh month; and premature births, where the child is born between the seventh and the end of the ninth. To this head also belong too late deliveries.

"The signs of an immature child are taken from the following particulars:

"1st. From its length, for, if it be not one foot long, we may be nearly certain that it is not completely formed.

2d. From its weight, which should exceed five pounds.

3d. From the figure of the head, &c. An incomplete child has a deformed face resembling an old person, with a wide mouth and slender ears like membranes; its eyes are shut; the hair of its head is of a whitish cast; the division between the bones of the skull, called the rhomboidal suture, gapes wide; the bones themselves are moveable; and the lips of the mouth resemble pieces of bloody flesh.

"4th. From its habit of body, which is for the most part thin and tender, and covered with a short down, and is of a reddish hue, particularly on the extremities and the face. If it be a male, the scrotum is of a round figure, and the testicles are not contained in it.

"5th. From its limbs, which are thin and weak, and the nails upon its fingers are soft, short, not extending beyond the fingers; nay, if it be very small, as of one or two months, the nails are by no means perceptible either upon the fingers or the toes.

"6th. From the conformation or constitution of its bones; for it is evident from experience, that in every month of gestation there is some alteration in this respect; ex. gr. in a fetus of five months, the orbits of the eyes are entirely formed into

bony-sockets; and in one of seven months, the small bones, subservient to the organ of hearing are so perfect, as scarcely to differ from those of a complete child.

“ 7th. From the umbilical cord, which is very slender.

“ 8th. From other curious circumstances which attend this little embryo, such as a constant indulgence in sleep, an abstaining from crying, an intolerance of cold, an indisposition to suck, or to use its limbs, or the muscles of other parts, such as those which are subservient to the evacuation of urine, or the depositing of the meconium.

“ The signs by which we distinguish a perfect child are taken,

“ 1st. From its size; its length being at least one foot six inches.

“ 2d. From its weight, which should be at least six pounds.

“ 3d. From the formation of its bones, which is known only by experience. But in general, a child can hardly be called complete, all whose bones, and every part are not entirely formed, though age may give some addition to their substance.

“ 4th. From the umbilical cord, which is thick and firm.

“ 5th. From other circumstances, opposite to those in that which was imperfect; such as that he cries, moves his limbs, opens his eyes, sucks at the breast, is not always asleep, can bear cold, has a white skin, can evacuate urine and the fæces, has long nails, and his head covered with hair.

“ That which relates to the conformation of a child, after it is brought into the world, is distinguished into monstrous and not monstrous: the former including all deviations from the ordinary figure of man. Monsters are again divided into perfect and imperfect. A perfect monster is that which absolutely differs in all its parts, from the human appearance, as when it resembles any brute animal, as a dog, an ape, &c. An imperfect monster is where only a partial alteration is made in its figure; and this may again differ, according as this partial alteration is made in the head or other parts; and this as it may be born without a head, or with the head of a beast, &c. Where a monster differs from a complete child, in other parts besides the head, it is distinguished into two sorts; as any parts in general are affected, or as more particularly the change is

wrought in the genitals only, and then it is called an hermaphrodite, which is likewise perfect or imperfect.

"In an enquiry into the nature of monsters in general, three objects of consideration present themselves. 1st. What is the cause of monsters? 2d. Whether are they possessed of life? 3d. Whether a perfect monster can be considered as a human being?

"1st. The cause of monsters is various, as depending on such changes in the constitution of the mother as can hardly be accounted for.

"Whatever view we take of the theory of generation, whether a germen be formed in the ovarium of the female, which is only impregnated by the semen of the male, or whether the homunculus is contained in that semen, and the female affords a nidus for its formation; still we see a strong resemblance to both parents in their offspring: and accidents or other causes contribute to make an entire alteration in the form of the fœtus, and produce monsters. We will not suppose unnatural connections, or that any impregnations can arise from that source; but imagination has a great power over the body of a female, especially during gestation; and the fluid in which the fœtus swims, or the womb itself may be disordered, so as to occasion great changes. Neither need we have recourse to the theory of the ingenious Buffon to explain how these are brought about; or suppose that every part of the human body has a representation in the fecundating quality of both parents, to form its construction. The first rudiments or germen of the human body is not a human creature, if it be even a living one; it is a foundation only upon which the human superstructure is raised. This is evident to anatomical observation. Were a child to be born of the shape which it presents in its first stages of pregnancy, it would be a monster indeed, as great as any which was ever brought to light. How easy then is it for disorder to prevent the exertion of that plastic force, which is necessary to form a complete animal.

"2d. Monsters may live, but it depends on what parts are affected, how long life shall be continued them. Where the monstrous parts are confined to the extremities, or even to those places which distinguish hermaphrodites, we find from

experience, that the vital powers are strong and vigorous; and were it not that such beings often fly from society, lead sedentary lives, and are deprived of some wholesome exercises to the human constitution, life might be enjoyed by them, and to as great an extent as by any other persons.

"3d. With regard to perfect monsters, most of the authorities which assert that any thing of that kind can exist, seem to be of no credit. But should any ever appear, we should consider that it is not form or shape, but reason and intelligence, which distinguish human creatures from brute animals.

"We are next to consider the nature of hermaphrodites; and as these are living beings, and sometimes capable of all the functions of society, such distinctions ought to be made relating to them, as will place their situation in the most proper light, and the most favourable to their happiness. They are great objects of our pity and complacency; for they are not only deprived of the common pleasures of mankind, but are subject to disorders which are painful, uncomfortable, and inconvenient. A perfect hermaphrodite, or a being partaking of the distinguishing marks of both sexes, with a power of enjoyment from each, is not believed by any one ever to have existed. Imperfect hermaphrodites, or monsters, whose organs of generation are affected, are frequently presented to us. They may be divided, according to the sexes, into what are called androgynus, and androgyna. The first is the male, who has in general his own organs tolerably perfect, but has some division in the flesh above, below, on, or in the scrotum, which puts on the appearance of the female pudendum. The penis likewise may be so obliterated, as to give no external appearance of the male; but the beard, and the constitution of his body, confirm him to be of that sex. The androgyna is a woman, who has the parts of generation nearly like another, but at the same time the clitoris grows to a great size, and gives the form of the male penis. This is a very inconvenient disorder, as she is sometimes deprived of the pleasures peculiar to her sex, and suffers much from disorders of the part. From her breasts, and the deficiency of beard, however, she is distinguished from the male; though it frequently and unfortunately happens, that such women are more subject than others to

robust and masculine constitutions. It is evident that the sexes here are as completely marked as in other persons, and, to all legal intents and purposes, they are man and woman.

"Some important enquiries may arise upon this subject. As, 1st. How far they are to be considered as impotent. This is, I believe, generally the case, but not always, and must depend upon proof. 2d. Whether they should be permitted to marry? This depends upon the former, but must, I should think, be left to their own choice. 3d. Whether change of the sexes might be allowed? This is certainly contradicted in the terms, and will admit of no dispute.

"With regard to the state of life of a child, the following question remains to be decided: At what time may a fœtus be supposed to begin to live? To answer this, we must consider, that conception is made in the ovarium of a female after coition with a male, when the subtle aura of the semen hath so far penetrated into the germen, which may be supposed to contain the outline of the future man, as to produce a turgescence and motion of its circulating humours. At this time, it may be said that life begins, i. e. immediately after conception. Hence those seem to err: 1st. Who would persuade us, that the fœtus acquires life when it is so particularly active, that the mother becomes sensible of its motions. 2d. Those who think that life does not begin till the seventh or fourteenth day, or even till a month after conception. And, 3d. Those who suppose that a fœtus, as long as it continues in the womb, where it does not breathe, cannot be called a living animal. The whole depends on our ideas of life and animation, and the act of generation to create it. If generation be the cause of animating the rudiments of the future being, and if that animation be construed to be understood by what is meant by life, then it must certainly begin immediately after conception, and nothing but the arbitrary forms of human institutions can make it otherwise.

"On this occasion we may enquire, what part of the human body is the seat of animation, or the soul? To which we answer, that evidently it resides most conspicuously in the brain, because that substance being hurt, all the faculties of the soul become disordered; and because all the nerves of the body, which are the great instruments of action, are derived from it

as a fountain. But it cannot be supposed that the whole of the brain is the immediate seat of the soul; it is probably confined to what is called the sensorium commune, or a small part from whence the nerves, destined to sense and voluntary motions, draw their origin; as they do likewise from an appendix to it, called the medulla oblongata.

"The next thing to be considered is, what kind of children, when born into the world, are to be deemed endued with life, or have a prospect of living; for a *fœtus* cannot live out of the womb of its mother.

"1st. Then, no abortion can be said to be endued with life: for if there be some signs of life when it is brought into the world, it cannot continue to live, for it can neither take the aliment which is necessary to its sustenance, nor, if it could take it, can it change such gross food into its tender nature. Some authors have asserted, that children of five or six months have lived; but this is probably a mistake; it being generally agreed, that infants so young cannot sustain the inclemencies to which they must be subject.

"2d. Children of seven months, or one hundred and eighty-two days after marriage, may live, though generally they are puny, and continue but a short time on earth.

"3d. All children above seven months are supposed to be endued with vital principles, and of consequence are allowed the privilege of life.

"The next subject of consideration is that of twins, supposititious births, and superfœtation.

"The right of primogeniture must be determined in natural births, by that which was first born into the world, and which must be decided by the by-standers. If the delivery, however, be made by a passage effected by art, the choice depending on the will of the surgeon, no proper determination can possibly be made.

"In the affair of supposititious births, two questions occur, according as the birth is performed or not. In the former case, a physician may judge, 1st. From those signs in the mother, which distinguish her having been delivered of a child. 2d. From those signs which refer to her incapacity of conception. 3d. From signs of impotency in the father. 4th. From the

umbilical cord in the child not appearing as of one just delivered. Some persons look upon the dissimilitude to the parents to be a sign, but this must be very fallacious. Where the supposititious birth depends on the present state of pregnancy, either the proper signs must be examined, or we must wait the event, should those signs deceive us.

"The impregnation of a woman already pregnant, is called a superfetation. This is either true or false; the former is, when it happens in the womb itself; the latter, when one fœtus is deposited in the womb, the other in the ovarium, the fallopian tube, or the cavity of the abdomen.

"The following requisites are necessary to a superfetation. 1st. The pregnant woman ought to bear two children, each of a distinct age. 2d. The delivery of these children should be at different times, at a considerable distance from each other. 3d. The woman must be pregnant and a nurse at the same time.

"There have been many doubts about the reality of the superfetation, but there is no disputing of facts; for which see Graves on Superfetation, Eisenman's Anatomical Tables, and the Leipsic Memoirs, 1725.

"How this superfetation is accomplished, is a matter of enquiry, and depends in a great measure on the constitution, or rather the formation of the womb of the mother.

"The last thing to be considered under this head of parturition, is the legitimacy or illegality of births; and this is divided into the time when a child is born after conception, and the conformation of its body. With respect to time, physically considered, (for laws may be as arbitrary as they please in this respect) all abortions, too early births, children of nine months, and those who are late born, even to ten months, may be considered as legitimate in old marriages. Illegitimate with respect to the time of birth, are all perfect and mature children, who are born in the sixth or seventh month after the celebration of marriage; and all late births, when extended to the eleventh, twelfth, or thirteenth month, especially if the husband died of a chronic or lingering disease.

"There are many causes alleged to occasion a delay or prolongation of delivery, such as great care and anxiety; some

severe diseases, as violent hæmorrhages, a phthisical disposition, &c., but these, one should imagine, would rather hasten than retard such a circumstance. Experience is the only guide we can follow in such cases; and, for the sake of humanity, the longest time that can be fairly proved, should be the standard to which we should refer.

“ With respect to the conformation of the body, all children may be considered as legitimate, who are born at or after seven months; but all abortions are illegitimate. Monsters, likewise, are not to be excluded for any trifling alterations; but where all appearances of human nature are obliterated, it would be wrong to take advantage of such a birth.

“ I. Idiotism is, 1st. either born with the subject of it, or appears as soon as the reasoning faculties should begin to expand.

“ 2d. It is established upon great defects of the memory, and much greater of the judgment, though this is not much attended to.

“ 3d. Idiots are in general prone to mischief, or to actions over which reason seems to have very little command.

“ 4th. They have not a proper command over the evacuation of fæces and urine, and drivel at the mouth.

“ 5th. They have generally strong and hearty constitutions.

“ 6th. They have a peculiar aspect, which describes a vacancy of thought and inattention to any engagement.

“ 7th. They have little use of speech, and articulate very incoherently.

“ II. Insane persons are either furious or melancholic; both of which acknowledge a great imbecility of the mental faculties, and which are derived from hereditary constitutions, attention of mind, violent passions, the terrors of a false religion, immoderate use of venery, poisons of the narcotic kind, some preceding disorders, the suppression of evacuations, indigestible aliments, a sedentary life, &c. But they differ in the following particulars:

“ 1st. The furious insane are naturally of angry and violent dispositions, in the prime of youth, and of a plethoric constitution, and tense fibre.

“ 2d. They lose all their natural delicacy of manners, and

become furious, ungovernable, and are particularly affected by pride, anger, hatred, and revenge, and very often intemperate lust.

"3d. They refuse their food, and yet preserve their strength; they scarcely ever sleep, are continually shifting their ideas from one thing to another, bear the cold with incredible patience, and are not easily affected by medicine.

"4th. They have a peculiar look with their eyes, descriptive of violent anger, mixed with a glariness like that of drunken persons; their eye-lids are constantly vibrating, and their hands, and sometimes the whole body, they keep in motion.

"Melancholy persons are,

"1st. Naturally dull, slowly learning, and easily forgetting, and are sad and melancholy, of a phlegmatic temperament, and relaxed fibre.

"2d. When the disorder seizes them they become abject, fearful, fond of solitude, prone to anger, changeable in their opinions and desires, but fixing their attention upon a single object.

"3d. The belly is constipated, the urine is made in small quantities; the abdomen is distended with wind; a sharp acrid matter is discharged by vomiting; the pulse moves very slowly; the aliment is devoured with greediness; the imagination is perverted so as that they are persuaded that they are made of glass, china, &c.; and lastly, and worst of all, they are induced to put a period to their existence.

"4th. Their eyes have a dull, heavy, and stupid look; they seldom move, but continue in one posture a very long time."

BIOGRAPHICAL SKETCH OF BICHAT.

[From the London New Medical and Physical Journal, for April, 1815.]

MARIE-FRANÇOIS-XAVIER BICHAT was born on the 11th day of November, 1771, at Thoirette, in the department of Ain. He was the eldest son of Jean-Baptiste Bichat, doctor in medicine of the faculty of Montpellier.

Thus fortunately circumstanced, Bichat was, at an early age, initiated in the principles of that science of which he was one day destined to become a distinguished ornament. From his cradle he was familiarized with that language, of which too many neglect the acquirement till called upon to employ it; and the daily application of precepts was presented to his view, ere the precepts themselves had been explained. Thus he possessed all the advantages of that education, which, operating by the force of example, insensibly disposes the mind to a determinate path of labour. That science, which must ere long become the object of severer studies, was first arrayed in an interesting and attractive garb. Upon the powerful effects likely to result from such an education we need not insist: they can be despised only by those incapable of correctly appreciating their magnitude and importance.

We pause not at that early period of the life of Bichat, which he passed in the ordinary routine of juvenile studies. The laurels which he won in rhetoric we shall not enumerate, nor display the honourable distinctions acquired by him in the exercise of philosophy. Interested only in tracing his professional career, we pass on to those maturer years, at which he first exclusively devoted himself to the cultivation of medicine.

At Lyons he commenced his anatomical labours. The unwearied ardour of his exertions, and the facility with which he surmounted the ordinary difficulties of dissection, soon attracted the vigilant eye of his preceptors. Frequently called upon to assist in the business of instruction, he, on these occasions, first displayed that clearness of idea, which formed, in after years, a conspicuous trait of his excellence as a teacher.

Anatomy, at that period, was little cultivated in France, except as the necessary introduction to surgical studies. In explanation of this remark, we need only to take a retrospective glance of the epoch to which it applies. The celebrated Desault then presided over the healing art: his ardent and enterprising genius had awakened an universal predilection for surgical pursuits. This predilection was signally favoured by the character of the times. Convulsed and bleeding within from the revolutionary struggle, France could only sustain herself by the arm of external conquest: her existence as a nation depended upon her military achievements; and the wounds of her victorious armies on every frontier unceasingly called for those cares and solaces which the hand of surgical science could alone bestow. Hence medicine, strictly so called, experienced a temporary neglect.

Urged on by the general impulse, Bichat at first directed his attention exclusively to the surgical department. He studied the principles of the science, and entered upon their application to practice under M. A. Petit, chief surgeon of the Hotel Dieu at Lyons. His zeal, and the rapidity of his progress in the path of knowledge, soon riveted the confidence of this great and estimable man: but Bichat was formed to shine upon a more distinguished theatre. The capital displayed a field for his genius, and opportunities of cultivation, elsewhere denied: thither he was at length borne by the revolutionary torrent. Obligated, after the siege of Lyons, to quit a soil where youth itself was deemed a crime worthy of the scaffold, he sought in the city of Paris that safety which no distinction of age or talent could find without its walls.

These were melancholy times: nor is it surprising that, at such a period of universal gloom and consternation, Bichat little thought of unfolding, in their native splendour, the uncommon talents which he possessed, and limited his views to the ordinary track which young surgeons in general are destined to pursue. His education finished in the school of Desault; he determined next to seek practice and personal security in the armies of his country.

Mingling with a crowd of pupils at the Hotel Dieu, Bichat,

alike inemulous of distinction and thoughtless of preferment, contented himself with writing down the public lectures of Desault. His application to professional duties was unremitting. At length the 27th of July dawned more conspicuously on the drooping sciences, and the soul of talent arose somewhat reanimated from its long depression. Bichat became conscious of his extraordinary powers; his views were extended; and a fortuitous event at once raised him from obscurity to an elevation honourable as unexpected.

A certain number of select students was appointed, each in regular succession, to take down the public lecture of the day, and arrange it in the form of an extract. On the morning after, such extract was read over to an assembly of the students, at which an assistant-surgeon presided. This was an established custom in the school of Desault: the advantages resulting from it to the cause of instruction are sufficiently conspicuous. We pause not to enumerate them.

Desault had, one day, been speaking at unusual length on fracture of the clavicle, and demonstrating the utility and application of the bandage employed by himself in these injuries. The student who, on this occasion, should have recorded the lecture, was absent. Bichat offered to supply his place. A strong sensation was excited by the delivery of his extract: the purity of his style, the clearness and precision of his ideas, the scrupulous fidelity of his recapitulation, would have done honour to a professor. He was heard with extraordinary attention, and left the room amid reiterated bursts of applause.

Alike capable of justly appreciating talent, and skilled in discerning even its most delicate and fugitive traces, the illustrious Desault neglected no opportunity, which his situation presented, of extending favour and protection to those in whom its energies or aspirations were displayed. No sooner had he learned from citizen Manoury the merits of young Bichat, than he expressed impatience to know him. On the first interview was disclosed to his sagacious glance the future destiny of his disciple. He hesitated not to offer to Bichat a residence in his own house; and from that moment looked upon him as his son, and as the heir to his professional reputation.

Thus was the native energy of Bichat excited to the utmost pitch: his exertions were unremitting. The variety of subjects, upon which his ardent and vigorous mind was employed, constituted his only relaxation. During the day, he was occupied in attendance upon the private or hospital practice of Desault, or in conducting his extensive professional correspondence; and in the researches upon various interesting points of surgical science greater part of the night was commonly consumed. He moreover contributed largely to a work upon diseases of the bones, undertaken by Desault towards the close of his earthly career. In this novel path of labour, our indefatigable student acquitted himself with great honour and punctuality. Yet, from pursuits thus various and exhausting, the active mind of Bichat could still rescue some transient intervals of liberation; but those, short as they were, he gave not to pleasure or repose. They were spent in the dissecting-room, or devoted to surgical or physiological discussions amid a circle of enlightened friends.

At length Desault died.* This unexpected event grieved Bichat, but did not disconcert him. His genius rose superior to difficulty and trial; he had become conscious of its energies and resources. Thus, after shedding the tears of gratitude over the grave of his lamented friend and benefactor; after presenting, upon the page of science, a fair and not inadequate tribute of veneration to the memory of that illustrious man, he thought only of entering with vigour on the more difficult and exalted path which opened to his view.

It was at this period that, abandoned to his own exertions, Bichat began the series of labours and experiments destined to immortalize his name. In the year 1797, he delivered his first course of anatomical lectures. With the modesty, almost universally characteristic of great talent, he forbore to open a

* Desault died on the 1st of June, 1795. The horrors of the revolutionary period had taken a firm hold upon his mind, and evidently accelerated his dissolution. He was arrested in May, 1793, on a charge of refusing to assist the wounded Republicans, on the memorable 10th of August; but liberated after three days' confinement in the dungeons of the Luxembourg. He was born at Magny-Vernois, a village in the province of Franche-Comté, on the 6th of February, 1744.

dissecting-room, and contented himself with simple demonstrations in a confined and incommodious situation. This year were established the outlines of his theory of the synovial membranes; a prelude to the grand work on membranes in general, which was shortly to be developed. The intervals of his lectures were assiduously devoted to scientific discussions with the more accomplished of his pupils, or to accessory courses of instructions in the various departments of anatomy and pathology. He entered also upon a course of surgical operations. In this novel and arduous character, to the assumption of which, except by a veteran and exclusive instructor, public opinion had been hitherto decidedly hostile, Bichat acquitted himself to the astonishment of the numerous students who crowded his lecture-room, rather from curiosity, than an anticipation of his success.

But amid such various and laborious occupations, the health of Bichat sensibly declined. The exertions of public speaking brought on a profuse and perilous hæmoptysis. Apprehensions for his life were excited. During a long confinement to bed, the pains of disease were far less terrible to his mind, than the disappointment and regret which a state of inactivity inflicted. His health re-established, he re-entered the field of labour with augmented energy. In the confident anticipation of the honours that awaited him, all remembrance of danger was utterly buried. He began a second course of anatomical lectures, more extensive than the former; and his dissecting room, now first established, was soon frequented by eighty students.

The difficulty of obtaining bodies was, at this time, extreme, and productive to our young teacher of extraordinary fatigue; but these obstacles, which would have damped the enthusiasm of a common mind, served but to kindle more effectually the spark that glowed in the heart of Bichat. Public Lectures, for which his own hand frequently prepared the subject of illustration,—a series of physiological experiments on living animals,—and private demonstrations, engrossed his attention by day; and when at evening, overwhelmed by weariness and spent with continual exertion, he reached home, other cares awaited him, and the hours of darkness, stolen from repose, were de-

voted to a compilation of the surgical works of Desault, a last tribute of respect to the character of his departed friend.

The investigations of Bichat, hitherto exclusively confined to the structure of the human organs, began now to be directed upon their functions. A new light was about to dawn on the science of physiology. The membranous system, at that time little explored by anatomists, presented to his enterprising mind a field of investigation alike fertile and attractive. From this period to the close of his short but memorable life, the pen of Bichat was unremittingly employed in unfolding novel views, or recording important discoveries in medicine or the auxiliary sciences. To enter upon any diffuse criticism of the literary production of this extraordinary young man; to examine his opinions, or decide upon his disputed merits, constitute no part of our present object. His various works we shall presently enumerate in the order of their publication, and content ourselves with remarking, that all of them which we have been able to procure, bear, although in an unequal degree, the traces of an intellect, gifted with great and rarely united powers. Boldness, ardour, originality, and all the attributes of commanding genius, were blended in the character of Bichat with the circumspection of gray-headed philosophy; and application, inflexible and exhaustless.

To his *Researches on the Pathology of the Human Organs*, the same novel principles were applied by Bichat, which had before so happily directed his examinations of their intimate structure and composition. He had explored and described each determinate tissue in the healthy state; it now remained for him to survey and discriminate their various changes under the influence of disease. This was an enterprise more vast and complicated than the former. None but the enlightened pathologist can correctly estimate its magnitude or difficulties. Numerous dissections must be performed, and the morbid phenomena traced in the living subject, or much of the light resulting from those dissections would be lost. All these labours were executed by Bichat with astonishing activity and perseverance. In a few months, he examined with his own hand more than six hundred bodies; and watched himself all the more instructive cases of disease which the Hotel Dieu presented. The

new and interesting information thus acquired, was afterwards communicated in a distinct course of lectures; and he, who had recently excited universal admiration, as the successor of Haller, was now beheld following with equal honour and applause the footsteps of the immortal Morgagni.

It was proved by Bichat, that each determinate kind of structure possesses a peculiar organization and properties, and is influenced, in its own peculiar mode, by diseased action; and, moreover, that the morbid condition of one membrane does not necessarily implicate the structure of neighbouring, or even contiguous membranes. This truth had not escaped the eye of other observers; but it is contended by the friend and eulogist of Bichat, that the insulated facts and disjointed observations of preceding writers had absolutely sunk into oblivion and neglect; that Bichat, more devoted to the study of Nature than of books, was really ignorant of their existence; and hence, that although the facts in question had not been utterly unknown to his predecessors, he might fairly claim all the honours of the discovery.

The close, we might almost say the last moment of the life of Bichat was occupied by researches on *materia medica*. His luminous and comprehensive mind had long been forcibly struck by the confusion and obscurity which hung over this interesting department of science: and he judged, that by methodical cultivation on fixed principles, it might be made to participate the improvements which other branches of medicine had experienced. In a preceding work, he had exposed the outline of his ideas on this subject; he had stated the necessity of classing medicinal agents, according to the influence they exert upon the vital properties. The former he now sought more fully to develope; and it remained for him to investigate the operation, sympathetic or direct, of the numerous articles of *materia medica* upon the different organs, or systems of organs, of the human fabric. For this object, reiterated observations were requisite. The Hotel Dieu, of which he had recently been nominated physician, afforded an ample theatre for experiments; and more than forty students zealously seconded him in these laborious researches, of which he, every day, in a separate lecture, stated the result. But the arm of death was

now raised to strike its victim, and the fair hopes, already in part realized, were about to be crushed for ever.

It was but too evident, that the career of a man, thus ardent and unwearied in exertion, thus careless of health, and prodigal of repose, must soon terminate. On every side, danger was foreboded, and gastric disorder committed frequent depredations on his system: but all was useless. Neither the warning voice of friendship, nor the menaces of disease, could arrest the step of Bichat in the path of science. Amid the burning heats of summer, he continued regularly to inspect the specimens of morbid anatomy, submitted to maceration for the purpose of experiment, and rashly exposed himself to their noxious emanations. One day, his sensibility of their baneful influence had been greater than usual; and an unfortunate accident decided the attack for which so many conspiring causes had paved the way. He fell in descending the stairs of the Hotel Dieu. A transient loss of consciousness succeeded this slight commotion. Regaining home with some difficulty, he passed a tolerably tranquil night. On the ensuing morning, a vehement head-ache arose, but did not prevent him from visiting his patients. Fainting was induced by this improvident exertion, and he retired to bed. The application of leeches to the head was, at first, productive of relief; and the consequences of the fall ceased to excite alarm. Presently, however, a train of gastric symptoms was developed in unusual characters of vehemence and alarm. A continual tendency to drowsiness came on: it was the mournful prelude to the closing scene of existence. Bichat died on Wednesday, July 21, 1802, the fourteenth day of his illness. From the justly celebrated Corvisart, and M. Lepreux, first physician of the Hotel Dieu, he received, during his short confinement, the most unremitting professional attentions.

Few men have been more generally esteemed than Bichat. The sensation excited by his loss was deep and universal. Throughout the medical school were evinced the strongest demonstrations of regret. More than five hundred students attended the funeral solemnity of Bichat, and Lepreux pronounced over his grave an eloquent and affecting eulogy.

Bonaparte, then First Consul of the French Republic, with

that laudable attention to the interests of science, which shone conspicuous in the gloom of his great but ferocious character, was no sooner apprized of this mournful event, than he ordered a monument to be erected at the Hotel Dieu, in commemoration of two men not more illustrious for their talents, than for the successful application of them to the most noble and beneficent studies that can occupy the human mind—the alleviation of human misery. On this monument are inscribed the names of Desault and Bichat—names that shall not perish, while one wreck of European splendour and reputation in medical science floats upon the stream of ages.

In the winter of 1798, Bichat published *the Surgical Works of Desault*, in three volumes octavo, with a long and animated “eloge” of that justly revered man. The doctrines of Desault are here exposed with clearness and fidelity; but the style of the work betrays negligence and haste.

Six memoirs, on various surgical and physiological subjects, appeared about the same time. The two first exhibit their author’s novel views of the membranous system. In the third, he described a new species of trephine. The fourth was on injuries of the clavicle; the fifth on an improved mode of applying the ligature to polypi. In the sixth were developed the principles on which his distinctions of animal and organic life reposed. These we have not seen.

About this time, the celebrated *Treatise upon the Membranes* excited the public attention. It is too well known to require eulogy or illustration from our pen. The matter composing it is incorporated, after undergoing many improvements and corrections, in a subsequent work.

The Physiological Researches on Life and Death, one volume octavo, was published in 1799. Under this title are comprehended two distinct and independent works. The first contains a general exposition of our author’s physiological views: in the second is illustrated, by a series of novel and beautiful experiments, the mutual connection subsisting between the three principal organs of the animal economy; the brain, heart, and lungs.

Next in order of succession comes *the General Anatomy*, in four volumes 8vo. This is the work to which we allude, in

speaking of the treatise upon the membranes. It involves a general consideration of the isolated materials which enter into the composition of the various organs, and the particular attributes by which these materials are respectively characterized. Bichat designates it, and it may be regarded as a system of medical anatomy.

We have now only to mention the *Descriptive Anatomy*. On this production the last efforts of Bichat were employed. He did not live to complete it. Two volumes only were published previously to his decease. The third was at that period nearly ready for the press; and this, with the two concluding volumes, was finished on similar principles of arrangement and description, by Messieurs Buisson and Roux; to whom Bichat, in his last moments, confided the undertaking. From the eloquent "precis historique," prefixed by the former of these gentlemen to the third volume of the *Descriptive Anatomy*, have been principally gleaned the scattered materials with which a foreign hand presumes to erect, on foreign soil, a rude and perishable monument to the genius of Bichat.

By different observers, the talents and merits of Bichat have been variously estimated. Extravagantly eulogised on the one hand, by blind and enthusiastic admiration; he has, on the other, been unjustly lowered, by envy and prejudice, to the level of ordinary men. Truth, we believe, on this, as on most occasions, lies in the medium, between opposite extremes. His claim of originality in the doctrine of the membranes, the ground upon which his high reputation as a physiologist seems principally to rest, may, we think, be fairly disputed. Certain it is, that previously to the period of the researches of Bichat, the early gleam of this luminous and beautiful doctrine, might have been discovered in Continental, and even in British writings; nor can we agree with M. Buisson, that they were neglected or forgotten. But it is asserted by this gentleman, that Bichat was utterly ignorant of the observations of his predecessors on this subject. Perhaps so. It would be presumptuous and indelicate in us to hazard a contrary opinion. Yet, that a man, like Bichat, entering upon an obscure and little ex-

explored path of investigation, should neglect to concentrate all the light which the remarks of preceding labourers might have thrown upon it, is an inference somewhat difficult of admission. And they, moreover, who have duly studied the operations of the human mind, must be well aware of the facility with which are imperceptibly appropriated to oneself the opinions of others; and the impossibility of retracing, at a future, and perhaps remote period, any determinate train of ideas, with clearness and precision, to its original source.

However this question be decided, even enmity and prejudice themselves must acknowledge, that the faculties and attainments of Bichat were alike extraordinary. To develop the mutual relations of scattered and imperfectly known facts, and determine, on unerring principles, the order of their arrangement, so as to constitute one fair and connected whole, frequently demands greater delicacy of intellect,—application more vigorous and intense, than discovery of the facts themselves. Is it generous, or even just, to detract from the glory of our immortal Harvey, because some insulated truths respecting the circulation were known previously to the epoch at which he flourished?

And whether we recollect that, at the age of thirty years, Bichat stood pre-eminently distinguished, by his labours and literary productions, in almost every branch of medical philosophy; or behold him enjoying, long ere the meridian of his day, as anatomist, surgeon, physiologist, and physician, a degree of public confidence and celebrity that rarely illumines the evening of age; our admiration and astonishment are equalled only by the humiliating consciousness of our own inferiority: and we turn from the contemplation of transcendent excellence with shame and heaviness of spirit, which none can participate—none can comprehend—but those, in whose ear

“Memory doth oft denounce the bitter curse
“Of time misspent, of talent misapplied,
“And fair occasions gone for ever by.”

That they who are loudest and most eager in detracting from the merits of Bichat, participate most poignantly in our feelings, it is not unreasonable to conjecture. We think they

might be more usefully and honourably employed in following his steps, and emulating his reputation.

Bichat, if we may credit the glowing language of perhaps too indiscriminate eulogy, was modest, frank, open, generous; the patron and protector of indigent genius; affectionate to his friends; charitable and meek, and forbearing towards his enemies. That some deep shades of human failing and infirmity were not blended with these glowing excellencies of character, we are, alas! too familiar with the innate and universal depravity of the human heart to hope. But we will not violate the sanctity of the tomb. Those failings, whatever they were, rest with him; or are lost in the remembrance of his great talents, and of the distinguished services rendered by him to the cause of science.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

Exposé of the State of Medicine in France during the year 1814, being the Anniversary Discourse of BARON DES GENETTES, as President of the Faculty of Medicine of Paris.

[From the London Medical and Physical Journal, for April, 1815.]

GENTLEMEN,

A year has elapsed since one of our number, according to custom, opened the schools of medicine, by taking a view of the progress of medical knowledge during the preceding year.

I shall confine myself to the exposition of our labours; afterwards do homage to the memory of such of our colleagues as have been recently taken from us; and lastly, fix the public attention of their fellow pupils on such of our students as shall receive the prizes this day awarded.

Baron Boyer, our colleague, has published in the course of the year a "Treatise on Chirurgical Diseases and Operations." The author of this important work thinks that the progress of modern surgery has been so rapid and remarkable, that it seems to have attained the highest degree of perfection of which it is susceptible. The greater part of surgical diseases are now perfectly well known, both with respect to their phenomena or the indications which they present. We may even frequently ascertain their proximate causes, determine their essential character, and consequently the best treatment. Instruments and apparatus are simplified from day to day; and the application of medicaments is better understood.

Therapeutics and Hygiena, which sometimes of itself supplies their place, and always aids them, belong to both branches of the medical art; the improvement of the therapeutic and hygienic methods, therefore, equally ensure the success of internal and external applications; a new proof among many others, of the indispensable necessity of rendering common to medicine and surgery the same institutions, and consequently the same sources of instruction.

Improvements so great, admitted by the whole world, and the chief glory of which is cheerfully conceded to the French,

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have rendered necessary the new publication of an entire body of chirurgical doctrine, to unite, in a treatise of a size at once convenient and elementary, knowledge scattered in books which would form a library.

M. Boyer, after the example of some of the restorers and promoters of the art, divides surgical pathology into two great parts. The first is dedicated to the diseases which appear in every part of the body, and is subdivided into several chapters, in which he treats of inflammation in general, of abscess, gangrene, burns, wounds, tumours, ulcers, and the various diseases of the bones and articulations.

The second part, drawn up after an arrangement purely anatomical, embraces the diseases peculiar to each organ. Most of the diseases which require surgical operations are referred to this division.

The author informs us, that it never was his intention to annex a complete treatise on operations, which would require immense labour. For these he refers to particular works on operative surgery, more especially to that recently published by M. Roux; adding, that the union of this work with his own will form a complete system of surgery.

On witnessing this association of a man of consummate experience with one who is still young, let those who are ignorant, or pretend to be so, of the state of our present method of instruction, cease to indulge in absurd declamations! Let them no longer repeat, in the face of direct evidence, that our school has never formed, and never will form, surgeons. We shall answer them by telling them that Richerand, Dupuytren, and Desormeaux, were seated on the benches of this school, before they sat among its professors; and that the former students of this school, such as Ribes, Tartra, Marjolin, Baffos, Beauchêne, Murat, Beclar, Baren, Brechet, and several others, promise to be the worthy successors of those who are now at the head of French surgery.

On reading M. Boyer's work, as well for my own instruction, as to give an account of it at this meeting, I could not refrain from making some reflections on the chapter entitled "On the Gangrene produced by Freezing." An eye-witness of the disasters which attended the retreat from Moscow, I

had an opportunity of observing, in an almost innumerable mass of men, the effects of the most rigorous cold.

I pass over in silence that perfidious sleep which fixes the body on a frozen bed, and induces inevitable death.

The doctrines of M. Boyer are entirely conformable to my own observations. To describe our sufferings would be to copy his whole chapter. Let us merely quote a few lines: "A sudden augmentation of very intense cold," says M. Boyer, "particularly when it is accompanied with wind, frequently occasions gangrenous affections and sudden death." We saw all this but too well verified, when, on the shores of the Beresina, a very violent north wind covered our faces with flakes of snow. The thermometer then stood at 21° below the freezing point; and it fell a few days afterwards to 24° , and even to 27° .

In another place M. Boyer says: "It has been thought that the cold extinguished the vital action, merely by coagulating the animal fluids; but the phenomena which accompany freezing announce that the cold acts on the solids also, and particularly on the vessels and nerves. It acts on the former by diminishing and even extinguishing their organic action; on the latter by blunting their sensibility, and thus preventing the exercise of their functions." We may go farther, and indicate a mode of action of cold, little known, a very intense effect on the brain and nerves, even when congelation has not attacked any part of the body at a distance from the centre of circulation. We have seen men, marching with every appearance of muscular energy, and the most decided and soldier-like pace, and heard them suddenly complain that a thick veil was covering their eyes. These organs, at first for an instant haggard, soon became immoveable; all the muscular apparatus of the neck, and more particularly the *sternocleido-mastoidei* muscles, became rigid, and gradually fixed the head on the right or left shoulder. The rigidity next extended to the trunk; the lower extremities then tottered, and the unhappy victim fell upon the ground, exhibiting, to complete the frightful picture, all the symptoms of catalepsy or epilepsy.

But to return to M. Boyer and his work: he has not entered into any details respecting the history of the art; he has not even indulged in a quotation, for this would not accord with

his plan. "He is anxious (I copy his own expressions) to show what is proper to be done, and not what has been done, upon this or that occasion."

A professor, who, like M. Boyer, has been long in the practice of lecturing, must occasionally find his own ideas in circulation. He has, in fact, recognised some, and has informed the public of them, that he might not pass for the plagiarist of those who have actually copied from him.

In a word, the work of which we have just given a slight sketch, is worthy of M. Boyer's high reputation.

Professor Richerand has also published, in the course of the year, the sixth edition of his *Physiology*. Although not essentially different from the former editions, and, although the same arrangement is preserved, yet several points of doctrine have undergone modifications, corrections, and important additions. Some articles, which were formerly too concise, have received the desired extension. Taking advantage, in short, of the labours which daily enrich physiology, M. Richerand has learned how to found them, and to appropriate them to himself, so as to justify the title of "*New Elements*," which his celebrated work bears, the preceding editions of which have been already translated into several languages.

M. Alphonsus Leroy, another of our colleagues, has published a little treatise "*On the Contagion which lately raged among the Cows, Oxen, and even the Human Race, in some Parts of France*." He has therein discussed the causes of contagion, with the means of remedying and preventing them; and concludes by some reflections on the utility of extensive public lazarettos.

M. Leroy confesses that his work was hastily drawn up, on the spur of the moment, arising from the alarm of an approaching contagion which threatened the department of the Aisne, where, fortunately, however, it did not break out. The treatise is as it were a detached portion of an extensive work, which presents ideas in many respects new, but which are not yet arrived at the degree of maturity to which the author proposes to extend them.

M. Leroy, in his ardour for the advancement of medical science, and more particularly that branch which relates to the

health of the female sex, has had the boldness to advise, in a case of schirrous uterus, the revival of the operation first practised by Oslander, and since executed by M. Dupuytren with all the dexterity for which he is distinguished. I merely indicate these subjects, leaving it to our colleagues to give the interesting details to the public, if they think proper.

Our colleague, M. Petit Radel, continues to be occupied in editing several articles for the *Encyclopedie Methodique*. We know that almost the whole of the surgical part of this grand dictionary has been executed of late by this laborious professor. We shall find, in succeeding numbers, several medical articles, by M. Petit Radel; among others, those which relate to hereditary, moral, nervous, organic, rheumatic, soporific, and syphilitic diseases. We shall also therein find the article "Ancient and Modern Physicians, as well religious as atheistical."

It could not be difficult for our colleague to prove the religious character of several of our professional brethren, but has he shown with equal clearness that others among them have merited the reproach of atheism? Is not this rather one of those outrages inconsiderately committed upon great minds by the intolerance of ignorant sectaries, or by the interested supporters of the most ridiculous superstition? We see, on the contrary, that, even in the days of polytheism, the religion of the physicians, in conformity to reason, rose above vulgar credulity. How exemplary and beautiful was the worship of Galen, when, exploring the remains of men and the animals, the structure of which he was studying, he said to the gods: "I shall describe these wonders and they shall serve as the hymns by which I shall celebrate your power!"

The alarm, more or less well founded, relative to the introduction into the capital of a contagious fever, which raged in several places where the armies were quartered and fought, or left sick behind them, gave rise to instructions which were drawn up by the Faculty of Medicine. I shall respect the modesty of those who drew up these papers, and omit, like themselves, to publish their names.

Many physicians and students of our faculty have been sent to give assistance to the menaced and actually diseased departments. Others have been of great service in the hospitals of

Paris, while several have fallen victims to their humane exertions. Brilliant rewards have signalized the names of part of the survivors, and all have acquired just claims on the public gratitude.

Among the inaugural dissertations presented to the Faculty in the course of the year, the following have been particularly remarked. I cite them in the chronological order in which they appeared.

1. Analytical Researches on various Affections, in which the Skin presents a Blue Colour, and in particular on those which have been designated by the name of Cyanose. By M. Gintrac.

2. Dissertation on the Plague, or Adeno-Nervous Fever. By M. Le Breton, of Rhodosto in Greece.

3. Observations intended to resolve the Question: Is the Apoplexy which is produced by an Afflux of Blood to the Brain, susceptible of Cure? By M. Riobé.

We shall now speak of the labours of the Members of the Society of Medicine, which we purposely confound with those of the Faculty of Medicine itself.

M. Alibert has given a new edition of his Elements of Therapeutics and Materia Medica. This work, which was translated as soon as it appeared into several languages, has been long diffused and received among the most celebrated medical schools of Europe. Nothing can be more judicious than the course pursued by the author in this imperfect work, which is the result of much profound and well directed study.

The Préçis of M. Alibert respecting Mineral Waters has this year received many important additions.

His great work on the Diseases of the Skin sustains its reputation. The ninth number, which treats of syphilitic affections, is full of striking matter. The rare perfection which we see in the execution of the plates, gives a great interest to those objects, hideous as they are. We expect with a lively impatience the continuation of this magnificent work, in which scrofulous cutaneous diseases will be treated.

M. Roux has published a "Memoir and Observations on the immediate Union of the Wound after the circular Amputation of the Limbs in their continuity, and particularly after

the Amputation of the Thigh," which were read to the class of Physics and Mathematics of the Institute on the 21st of March, 1814.

This paper, the object of which is to discuss and revive, from observations actually made, methods which have been rejected, opposed, or laid aside, has been sufficiently appreciated, and has received the encouragement which it deserves, in a report by Messrs. Percy and Deschamps, adopted by the Institute, and published at the end of their Memoirs and Observations for the Year.

M. Roux has added a curious case of a Divergent Strabismus of the right Eye, cured in an adult, who was affected with it from infancy.

We are of opinion that concerning a deformity in an organ so sensible as the eye, not only are repeated experiments requisite, but there must also be a permanency in the relief or the cure, ere we can decide upon the merit of the method, and ascertain, if we may be allowed the expression, what is truly specific.

Since the publication of the work just announced, M. Roux has made a visit to London, and we are assured that he intends to publish some observations, in order to make us acquainted with the particular practice of the most eminent surgeons of that capital. Such communications must be very instructive when coming from enlightened and impartial men, who have had time to look calmly around them. It will be at once advantageous and pleasing to know, after so long an interruption of our intercourse, who are now-a-days the successors or rivals of Pott, John Hunter, Keate, and Blizard.

M. Nysten has published "A Dictionary of Medicine, and of the accessory Sciences," 1 vol. 8vo. This work cannot fail to be very useful to students.

And why should we omit an important work composed by a young Spanish physician, who graduated with our Faculty, and, by the circumstances of the times, became in some measure one of our adopted sons?

M. Orfila, the gentleman in question, has this year published a "Treatise on Poisons from Minerals, Vegetables, and Animals." This general toxology is drawn up with a due regard to

physiology, pathology, and medical jurisprudence. Such a work, put forth with the assistance of several experiments and accurate observations, ought to be the better received, as it was really a desideratum in medicine and jurisprudence: in fact, all preceding treatises are, without exception, incomplete, inaccurate, and far behind the present state of our knowledge.

M. Orfila, in the first place, carefully describes the physical and sensible characters of poisons, in their simple and natural state; and afterwards indicates the chemical properties of those substances, noting with great exactness the phenomena which they exhibit by means of the greatest possible number of re-agents.

M. Orfila afterwards shows the differences which poison, when mixed with food of various kinds, presents with the same re-agents.

But what most concerns our art and the public security, is the indication of the best methods of arresting the action or incipient effects of poisons, and of remedying the disorders which they have already produced on the animal economy.

We think it right to observe, that we have promoted, of late years, to the degree of Doctor of Medicine, several Spaniards of the greatest promise. They have sustained, in the midst of us, by the lustre of their talents, a valuable portion of the national honour: while the majority of their fellow countrymen, full of the recollection of the valorous achievements of their ancestors, have broken the yoke which was in vain attempted to be imposed on them.

The Bulletin of the Faculty and of the Society of Medicine, the editing of which is confided to Professor Dumeril, has communicated to the world, more or less in detail, whatever has been most interesting to the profession. We may remark in particular, in a recent number, the extract of an observation on the ligature of the external iliac artery, communicated by M. Bouchet, chief surgeon to the Hotel Dieu of Lyons. This fact, with the manner in which it was brought forward, and the reflections which it occasioned in the Society, remind us of the most flourishing days of the old Royal Academy of Surgery.

I must now call your attention to the losses which we have

experienced. We have already observed, that the faculty of medicine, and the society formed in its bosom, are indissolubly knit together. It is thus, as a member of the society which forms part of our school, that I shall express our common regret for the loss of one who honoured me with his particular regard, Charles Louis Dumas. When upon the death of Grimaud, cut off from his professional career at the age of thirty-seven, it was you, Dumas, who placed yourself in the ranks to succeed him; you saw, without regret, the crown adjudged to Fouquet, who at the age of sixty-five could no longer have any rivals. Another chair became vacant by the death of M. Sabatier, and the keeper of the seals of France, who honoured you with his esteem, wished you to fill it. Afraid, lest it should appear that you were indebted to favour, and not to your own merits, you scrupled not to re-descend into the arena.

The writings of Dumas may be classed under three different heads. The first belong to the institutions or elements, and are purely anatomical or anatomico-physiological; the second relate to practical medicine; and the third class is composed of various isolated pieces, such as memoirs, observations, discourses, and eloges.

We shall take a cursory view of these various productions, not according to the division which we have established, but in chronological order; which will best exhibit the progress and history of his mind.

Dumas made his debut in 1785, at the age of twenty only, by an inaugural dissertation upon "Life." This first performance indicates the direction which his mind took and constantly preserved from that moment.

A short time afterwards, he was a candidate for a prize proposed by the Royal Society of Medicine. It was required "to determine in what species, and at what period, of chronic diseases, fever may be useful or dangerous, and with what precaution we ought to excite or moderate it in their treatment." The memoir published by Dumas on this occasion is a judicious selection of the opinions of the best authors. Before the age of experience, we can only resolve similar questions in this way. The prize was divided between Dumas and M. Pujol, formerly a practitioner at Castres in Languedoc.

Life History of the Use of Medicine in France in 1800

Dumas published, at the subscription of the year 1791, in which we were assisted, a series of *Theses*, which, conforming to the custom of the faculty of Montpellier, were composed, four hundred, and maintained within the space of fifteen days.

In 1791, Dumas gave an edition of his "*Complete Course of Botany*," of the use of *Corment*, in 4 vols. 8vo. conforming to an manuscript copy inserted in the testament of the estimable author. Dumas was assisted a few months or so, by a well-known editor, who, without delicacy, published the same work in three volumes only, and in the same form. The opinions of medical men are divided as to the merit of the two editions.

Dumas was assisted the same year with M. Petit D'Aren, in translating "*An Essay on the Nature and Treatment of Pulmonary Consumption*," written in English by Thomas Doct. For work contains only one fact and its inductions. For a fact, that the osseous arising from sea-sickness has been known to give relief in incipient pueraria. The inductions are, that soap and emetics, in small doses, might be useful in the treatment of the same disease, and in the same stage. We must be sorry the merit of the original work, we may think, that the translator, by adding a preface and notes, have succeeded in making a far better book.

Elected professor of Anatomy and Physiology in 1795, Dumas published in 1797, in 1 vol. 4to. a *Treatise on Myology*, and the manner of Winslow, Albinus, and Chaussier. This work is entitled, "*Methodical System of the Nomenclature and Classification of the Muscles of the Human Body, with Descriptive Tables for recalling their Ancient Names, their New Names, Situation, Attachments, Direction, Composition, Figure, Connection, and Use.*" A dictionary containing the whole synonymy of the muscles terminates this treatise. It is an imitation and an extension of the work of one of our colleagues, whom we have mentioned constantly, preceded by general principles and reflections on the formation of languages.

Dumas published, in 1800, and in 4 vols. 8vo. his *Principles of Physiology, or Introduction to the Experimental, Philosophical, and Medical Knowledge of the Living Man.*" He brings forward with address whatever was most important on

this subject, grounding his opinions in preference upon the writings of Stahl, Haller, and Grimaud. Another person, who approached in some respects the first, who, in point of erudition, equalled the second, and who surpassed the third in every respect, (I mean Barthey,) was offended at the silence of Dumas, who, in borrowing several of his ideas, had forgotten to acknowledge their author. Barthey had a right to complain, and he did so, with that air of authority which was peculiar to him, and which he but too strictly maintained in this discussion.

I pass over slightly the "Physiological Sketch on the Transformation of the Organs."—*Journal de Physique*, 1805 and 1806. To believe that the stomach can fulfil the functions of the brain, and *vice versa*, the brain those of the stomach, would be to return to the chimerical ideas of Paracelsus and Van Helmont. It was quite in a different spirit that Dumas published an observation, that does great honour to his talents, on the subject of an epilepsy rendered intermittent, and afterwards cured by the administration of bark.—*Journal de Medicine*.

Dumas pronounced, in 1804, a Discourse on the future Progress of the Science of Man. His hopes were founded on the continuation of the application of analysis, and the perfection of the faculty of observation.

A new edition of his Physiology, as before in 4 vols. 8vo, appeared in 1806.

The Eloges of Fouquet and Dorthey, published, the first in 1807, and the second in 1808, are two papers which do equal honour to the head and heart of Dumas. He had, it is true, in praising the former, merely to repeat what medical Europe had proclaimed for thirty years; but he had to make known in the latter a man nearly of the same age with himself, a former competitor for the same chair, and a rival for glory in the same school; although Dorthey, in a more especial manner, cultivated other branches of the natural sciences, in which he has left a great name.

We now come to a period of his life when Dumas published a work more original, and more peculiarly his own, if I may be allowed the expression, than any of the foregoing. It is the best of his productions, and also the last.

The treatise of Dumas on "Chronic Diseases," is divided into four parts. In the first, he explains the essential phenomena of these diseases, and the differences which exist between them and acute diseases. The second part explains the theory of the formation of chronic diseases. In the third part, he examines the modifications produced in diseases, by age, sex, passions, and influence of climate. The last and fourth part exhibits the application of the distinction of the elementary affections to the treatment of diseases.

This work, although very extensive, remained imperfect until it was followed by a volume of developments and applications to a great number of observations. When Dumas wrote this treatise, which appeared at Paris in 1812, he enjoyed a high reputation, which could only be increased by it: he was surrounded by that consideration which his talents and his eminent social qualities merited. Finally, he was loaded with academical, literary, and other honours of every kind, when he died at Montpellier, on the third of April, 1813, at the age of forty-seven.

We have still another heavy loss to deplore, and it is still more recent and more premature; we mean that of Julien-Jean-César Le Gallois, who died in February last.

Professor Dumeril has already published a very interesting account of Le Gallois. The son of an honest agriculturalist in easy circumstances, he received a liberal education: he gave early signs of talent, and, on finishing his studies, he felt a *penchant* for medicine, which he studied in the university of Caen, which reckoned, among its medical professors, Chibourg, Le Canu, and Rousell, and which had produced Vicq-d'Azyr, Thouret, and Vauquelin. The revolution about this period assumed a most frightful shape. Those who still retained some sentiments of commiseration and some ideas of equity, and the young in particular, burning with indignation, ranged themselves under the standard of a party which has since been distinguished—that of *Federalism*. Le Gallois became, under these circumstances, one of the leaders of the students. It is useless, impolitic, and perhaps dangerous, to dwell upon those times of calamity: suffice it to say, that the party in question was crushed in Calvados as well as throughout France, and that

Le Gallois, obliged to fly, hid himself, first at Paris, where he was discovered; that he took refuge among the sciences, and was so fortunate as to be employed in the manufacture of saltpetre in a department at a distance from the capital. Upon the formation of the three schools of medicine he returned to Paris, where he was received as one of the pupils from the departments; among his fellow students, he was distinguished, and began by fixing the attention of the learned world upon him by his Thesis for the doctorate on the following question: "Is the blood identically the same in all the vessels which it passes through?" This production announced a man of science, who was determined to proceed in his studies by the thorny, but otherwise fertile, road of experience.

Le Gallois shortly afterwards took part in the discussions occasioned by the famous thesis of Boulet, who, in an ingenious and erudite paradox, threw some doubt on the existence of Hippocrates.

Suddenly, a grand idea struck Le Gallois and absorbed all the faculties of his mind. He sought for the solution of the boldest problem,—for he sought nothing less than the discovery of the principle of life!

The history of the sciences exhibits to us the first chemists as almost all occupied for centuries with the transmutation of the metals and the universal panacea. They could neither create gold nor prolong the life of men, and yet they enriched the arts with numerous useful processes, and medicine with several very powerful remedies.

Le Gallois did not succeed any more than they in determining in what life precisely consists; and, perhaps, it is not given to the feeble intelligence of man to discover the primordial laws of the great phenomena of our organization; but, in seeking for the solution of a question still undecided, Le Gallois threw great light on several very important points in physiology. He is, in this respect, the most distinguished man which our school has produced since Bichat.

The labours of Le Gallois are contained in a work entitled "Experiments on the Principle of Life, particularly on that of the Motion of the Heart, and on the Seat of this Principle." This valuable collection of facts has produced a work equally

important; viz. the report made on this subject to the first class of the Institute, by Baron Humboldt, so dear to the sciences on many accounts, and by our colleagues, Halle and Percy; these gentlemen caused to be repeated before them, first, the series of experiments relative to the principle of the inspiratory movements; secondly, the experiments relative to the principle of the powers of the heart. But these subjects cannot be analyzed in the present discourse.

Le Gallois has also left a work on the teeth of the rabbit and the guinea-pig, on the duration of gestation in the latter animal, and on the relaxation of the symphysis pubis at the moment of parturition. The observations and experiments on these various subjects were made while Le Gallois was enquiring into the principle of life.

The result of all his enquiries and experiments relative to circulation are also printed in the excellent article *Heart*, (*Cœur*,) which Le Gallois supplied for the New Dictionary of the Medical Sciences, which reckons among its authors several professors of this faculty, and almost all the most distinguished physicians and surgeons of this capital.

Le Gallois, who was qualified by his education and talents to practise either surgery or medicine, adhered to the latter branch of the healing art. He had been nearly a twelvemonth physician to the Bicetre. He lived in Paris, and it was when proceeding on foot to his duty, as he frequently did, that he was attacked by a peripneumonia, to which he fell a victim in the beginning of February last year, leaving an interesting family inconsolable for his loss.

We have to express our regret that we cannot detain you a few minutes longer by detailing at full length the life of Villars, dean of the faculty of medicine of Strasburg, and associate of our society of medicine, who died on the 27th of June last.

The details of his life would exhibit to your view a man deprived almost from birth of all hope of acquiring the slightest knowledge of letters. You would see afterwards by what difficult bye-paths, and how, with talents almost entirely flowing from nature, he attained an honourable place among the physicians, and particularly the most distinguished botanists of the day.

The intimacy of Villars, in his youth, with J. J. Rousseau; his zeal for the instruction of the numerous pupils whose minds he formed; his humane attentions to the sick as physician to a great military hospital, or as a practitioner among all classes of society, will present some affecting traits to whoever shall draw up his eloge with all the extent it deserves.

Let us no longer withhold the recompenses which await those, who at the last exhibition of our practical school ought to be preserved as examples for the emulation of their fellow students.

This last exhibition has not been in truth so numerously attended as on other occasions, and the candidates have not given the same proofs of proficiency as in preceding years. He whose name was first called, was a convalescent from a severe disease contracted in the hospital, when he underwent his examination. The other candidates who will receive prizes after him, whatever be the place which they occupy, are equally worthy of encouragement and indulgence, both on account of their exertions and of the arduous circumstances in which they found themselves at the end of the last and the beginning of the present year.

Report of the State of Vaccination in Sweden. (Translated from the Original in Swedish.) Ordered, by the British House of Commons, to be printed, July 19, 1814.

[From the London New Medical and Physical Journal, for September, 1814.]

On the 14th of January, 1814, Mr. Macmichael, an English gentleman, attended the Royal College of Health in Stockholm, and delivered to the college a copy of the Report of the National Vaccine Establishment in London, dated the 22d April, 1813, and presented to Lord Sidmouth, secretary of state for the Home Department; at the same time he requested, that a short account of the progress of vaccination in Sweden, and of the measures which had been adopted for its promotion, might be communicated to him, for the information of the British Parliament.

The Royal College had particular satisfaction in receiving

Mr. Macmichael, and undertook to comply with his request so much the more readily, as it had the pleasure of numbering among its honorary members the respectable name of Dr. Jenner, for whom it was reserved to demonstrate, by the most decisive experiments, the protective power of the cow pox against the most terrible and destructive contagion of the small pox; a pestilence, which, by means of this blessed discovery, must certainly be ultimately extirpated from the face of the earth.

It was to be expected, from the excellent arrangements which the kings of Sweden had adopted for somewhat more than half a century, in every department of medical science, that the incomparable discovery of Dr. Jenner, like the inoculation for the small pox at a former period,* should not only become an object of the most accurate investigation, but also, when approved by experience, be generally introduced and promoted by rewards and established regulations.

The medical practitioners of Sweden, who had already been informed, from the time of Dr. Jenner's first discovery, by means of a constant correspondence with the learned in other countries, of the expectations which were entertained of the success of experiments made with the cow pox, had great pleasure in learning that one of their colleagues, Dr. Gahn, a member of the Royal College, had, towards the end of 1799, procured some vaccine matter, and obtained the most satisfactory result from inoculating with it. Another Swedish physician, now professor of medicine, Dr. Rosensköld, printed in 1801 a small pamphlet, entitled "To the Public on the Cow Pox;" and performed vaccination with success in several parishes in Skåne. About the same time the undersigned also published a more detailed account, with coloured figures, under the title, "The Small Pox may be extirpated;" and this essay was distributed to all the churches in the kingdom.

The government, already attentive to the inestimable advan-

* It is remarkable, that the celebrated Dr. David Schultzenheim, who was appointed as long ago as 1754, by the states of the kingdom, to inquire into Sutton's and Dimsdale's mode of inoculating the small pox in England, is now the president of the Royal College of Health, and has been the most instrumental, by means of his powerful influence, in promoting the most salutary measures for the introduction of vaccination.

tage, which the inoculation of the cow pox seemed to promise, directed the college to examine Dr. Jenner's discovery with the greatest accuracy, for which the proper means were immediately afforded; and the college was ordered, after collecting the results, to present its report to the king.

This report, which fully confirmed the excellence of the Jennerian discovery, occasioned the salutary law which was first enacted in 1803, by which vaccination was established throughout the kingdom; and the college was commanded to promote its adoption by all possible means. The king was pleased to appropriate 900 dollars, spec. banco, to be divided into premiums, which were to be distributed among such medical men as could exhibit the greatest number of vaccinated persons.

A particular regulation was made for the metropolis, imposing a fine of three dollars on any one, who should fail to announce to the medical officer of the district, the appearance of the contagion of the small pox; and in every such case, the person infected was to be carried to the Small Pox Hospital, where every measure was adopted for his being properly nursed; and the same precautions have been continued to the present time.

It was long a question, whether new-born children could be vaccinated with success, and whether the matter taken from them might be employed with as much security as if taken from adults.

This doubt has been altogether removed, and in the General Lying-in Hospital all the children are now vaccinated within nine days from the time of their birth; so that, by means of this progressive vaccination, fresh matter remains constantly in existence.

The want of a sufficient supply of vaccine matter for the extensive provinces of the kingdom, was long an obstacle to the universality of vaccination in Sweden. The obstacle no longer exists; since the Royal College of Health, in consequence of the humble representations which it made to the king, obtained the adoption of a very effectual measure for this purpose, in the appointment of a particular establishment for the general regulation of vaccination throughout the kingdom; which took place in the year 1812.

This establishment consists of a director, and several inspectors of the stations for vaccination in the provinces. The director is a member of the Royal College of Health, whom the king has graciously commanded to receive and examine all reports, to answer all inquiries, to conduct the distribution of vaccine matter, which is delivered, free of postage, to all persons who apply for it; and lastly, to report, to the college every thing relating to vaccination that requires further regulation, and to propose to it, as proper persons to receive rewards, all those who appear to be the most deserving. He has also the immediate inspection of all the medical men, who are appointed to conduct the business of the stations, established in almost every province; the progressive vaccination performed at these stations being calculated to maintain a constant supply of fresh matter, which is also distributed, free of postage, to those who require it; and their proceedings being registered in proper catalogues and journals.

In Stockholm, three several stations of this kind have been appointed, whence fresh matter may always be procured with certainty, if it happens to be wanting in any particular province.

The archbishop, bishops and the whole of the clergy throughout the kingdom, having, from the time of the happy discovery of Vaccination, embraced it with the most distinguished zeal; and many of this respectable body having not only employed the most effectual means for the removal of vulgar prejudices against it, but having even actually practised vaccination themselves; the king, assured of the continued exertions of the clergy in the same cause, was pleased to direct, that every minister should superintend the progress of vaccination within his parish; and should be empowered to call to his assistance one or more inspectors of vaccination, according to circumstances, for the purpose of causing all children to be properly vaccinated within the first year after their birth, and keeping proper documents of the performance of the operation. In each parish or district there must be an accredited vaccinator, whose duty is to perform vaccination, and to give a report of his proceedings to the Royal College of Health.

The college has also published, by the king's command, a

book of instructions for vaccinators and inspectors of vaccination, which has been distributed gratis to all the Churches in the kingdom. This treatise, adapted to the use of the public, affords an accurate knowledge of the true and false cow pox; of the varieties which most frequently occur in it; and of the cutaneous diseases, which occur so often in Sweden, very nearly resembling the small pox.

For the more effectual encouragement of the practice of vaccination, the king has been graciously pleased to appoint rewards of two different kinds, pecuniary premiums and honorary medals. The latter are distributed commonly in silver, but sometimes in gold, to those who have particularly distinguished themselves. In all cases, those who have deserved rewards are humbly pointed out to the king by the College of Health; and his majesty has reserved to himself the right of assigning the proportions in which those rewards shall be distributed. It is also in the king's name, and with a certain degree of publicity, that these marks of his approbation are bestowed.

For the honour of the medical profession in Sweden, it must not be forgotten, that although inoculation for the small pox was one of the most lucrative branches of their private practice, and has been entirely superseded by the simple process of vaccination, no one individual of the profession has raised any obstacles against the cow pox; but every one has contributed to its advancement, by giving advice, information and assistance, to the utmost of his ability. No single publication has appeared to call in question its high importance,* and its superiority to variolous inoculation; which has been entirely discontinued ever since the year 1802, rather by a tacit and universal consent, than in consequence of any royal prohibition.

* The answer which the undersigned returned, the 1st Nov. 1801, to a letter addressed to him, by the Vaccine Committee of the Society of Medicine at Paris, and which is inserted in the second report of that committee, cannot justly be considered as a publication of this kind. It was not quite three months after this time, that having acquired perfect confidence from inoculating a cow with the cow pox, and transferring the operation to the human subject, he published the before-mentioned Essay, entitled "The Small Pox may be extirpated."

It may therefore be asserted, that the small pox, that equally disgusting and destructive pestilence, which for many ages continued annually to send out of the world an immense number of young children, is now, through the influence of Dr. Jenner's inestimable discovery, so perfectly extirpated in Sweden, that it never can become epidemic, even if at any time, notwithstanding all the orders and all the vigilance employed for its exclusion, the infection should make its appearance. Such, in the last twelve years, has been the effect of the king's wise and humane attention, of the unanimity and disinterestedness of the medical profession, of the patriotic zeal of the clergy, of the good examples so promptly exhibited by the upper classes, and of the progress of information and civilization in the lower.

The undersigned, who has drawn up this short account at the request of the Royal College of Health, has also the honour of sending with it, in the name of the college, a copy of the Book of Instructions, and an impression in silver of the honorary medal, which was struck by the king's command, under the direction of the college, and which is distributed in the king's name for the promotion of vaccination.

FR. HEDIN, M. D.

First physician to the king, medical counsellor, &c.

Stockholm, 10th February, 1814.

The French Dictionary of Medical Sciences.

[From the London New Medical and Physical Journal, for July, 1814.]

We feel no common gratification in announcing to the medical profession, the appearance of this interesting and important work. It promises to form a fair, if not splendid monument, of the talent and industry of our enlightened neighbours in those departments of human acquirement, the consideration of which, as allied to the philosophy of medicine, it exclusively involves.

Two years have now passed away since the publication of the first volume of the French Medical Dictionary was announced in Britain. In the spring of 1813, four volumes had

reached this country: the importation of others we have long and anxiously anticipated.

The French Dictionary of Medical Sciences is the joint undertaking of a Society of Physicians and Surgeons. An enumeration of fifty-eight members of this Society, all, we believe, distinguished in their respective departments, is presented upon the title page. Many among them, whose reputation shall only perish with the science which they have arisen to illumine and adorn, we most joyfully recognise. With the enlightened and philosophic of our own isles, the names of Alibert, Boyer, Chaussier; of Cuvier, Gall, and Hallé; of Larrey, Le Gallois, Petit; of Pinel, of Richerand, and Spurzheim, must be held in pleasing remembrance. We cannot let them pass, without offering to their talents this feeble tribute of our applause and veneration.

To those who may withhold the tribute of respect and veneration at the shrine of French medical genius, we beg leave to recommend the frequent recollection of a few not very despicable names:—the great Desault, the zealous Vicq-d'Azyr, the learned and philosophic Cabanis, the memorable Bichat, over whose untimely grave the lament of science shall long be heard. We would have them remember that, in addition to the enlightened phalanx, whose labours are now before us, France also boasts her Corvisart, her Portal, her Sabatier; besides numerous other men, whose talents and productions shed no feeble light upon the various paths of medical improvement, to which their inquiries have been directed. Were farther proof of the justice of our eulogies wanting, it might be aptly educed from many luminous and finely-written articles in the volumes now under consideration. Those on medical police, on medicine, as connected with the science of war, and on every branch of natural philosophy, in which medicine is interested, generally exhibit, in our opinion, features of distinguished excellence.

Amid the varied reflections, to which our perusal of the French Dictionary of Medical Sciences has given rise, we must not forget to mention, that the editors propose its completion in twelve closely-printed octavo volumes. Those which

we have already received contain each, upon the average, about 600 pages. The work is written, as its title indicates, in alphabetic order; and, at the close of the fourth volume, the letter C is scarcely half completed.

Experiment on Respiration, which had nearly proved fatal.—Beneficial Effects of Oxygen Gas in restoring suspended Animation; by SAMUEL WITTER, Esq. Dublin.

The following case occurred very lately in the laboratory of the Dublin Society, and excited considerable interest.—When a mixture of carbonate of lime and zinc, or iron filings, is exposed to an intense heat, the peculiar gaseous substance named carbonic oxide is disengaged, which has been stated to bear the same relation to carbonic acid that nitrous gas does to nitric acid. But agreeably to the striking observations of Mr. Higgins, professor of chemistry to the Dublin Society, in his work recently published, wherein his claim to the discovery of the atomic system is unequivocally established, it would appear that, in the combination of oxygen with different gases, it is the atom of oxygen only that is found multiplied, as is beautifully exemplified in all the metallic oxides, acids, and gases. An apparent anomaly has been noticed with respect to nitrous oxide, which the experiments of Mr. Higgins on the composition of nitrous gas tend to obviate, and sanction a comparison of the proportions of carbon and oxygen in carbonic oxide with those of azote and oxygen in nitrous oxide, rather than the atomic coincidence of carbonic oxide and nitrous gas. Carbonic oxide was discovered and described by Mr. Cruickshank in 1801; it is highly combustible, burning with a fine blue flame, but is utterly incapable of supporting animal life.

The diversified experiments of Sir H. Davy on the respiration of nitrous oxide and some other gases, so interestingly described in his scientific researches in 1800, in a great measure dissipated the general apprehensions of fatality resulting from the inhalation of compound gases, and satisfactorily de-

monstrated that many of the aërial fluids, before considered as destructive to vitality, might be breathed with perfect safety.

Desirous of witnessing the progressive effects of carbonic oxide when freely respired, with a view to comparative analogy in reference to nitrous oxide, I was tempted a few days ago to inhale a portion of it as copiously as possible. The consequence had very nearly proved fatal to me. A considerable quantity of the gas having been carefully prepared by Mr. S. Warmby, the very ingenious and able assistant to Mr. Professor Higgins, a series of experiments on its respiration were proposed. Mr. Warmby first noticed some points of resemblance it bore to the nitrous oxide, particularly the singularly sweetish taste, and, having made two or three inspirations, was seized with a degree of convulsive tremor and giddiness that nearly overpowered sensibility. These violent effects were but transient, though considerable languor, headache, and debility, remained for many hours afterwards. Anxious to pursue the experiment still further, I next made three or four hearty inspirations of the gas, having first exhausted my lungs of common air as completely as possible. The effects were an inconceivably sudden deprivation of sense and volition. I fell supine and motionless on the floor, and continued in a state of total insensibility for nearly half an hour, apparently lifeless, pulsation being nearly extinct. Several medical men being present, various means were employed for my restoration, without success; when the introduction of oxygen gas by compression into the lungs was suggested, the effects of which may be fairly contrasted with those of the carbonic oxide. A very rapid return of animation ensued, though accompanied by convulsive agitations, excessive headache, and quick irregular pulsation; and, for some time after mental recovery, total blindness, extreme sickness, and vertigo, with alternations of heat and shivering cold, were painfully experienced. These unfavourable spasms were succeeded by an unconquerable propensity to sleep, which, as might be expected, was broken and feverish. An emetic of tartarised antimony finally removed these alarming symptoms, and the only unpleasant effects felt on the ensuing day were those occasioned by the fall.

I very much regret that the confusion arising from the idea

of my death, so disturbed the arrangement, that no accurate determination could afterwards be made, either of the quantity of gas respired, or the change it underwent in the process; and the experiment is rather too hazardous for repetition. Nevertheless, the extraordinary efficacy of oxygen gas in cases of suspended animation produced by carbonic acid, choke damps, and other suffocating gases, is fairly deducible, and, I conceive, cannot be too forcibly recommended to the faculty, in such instances. I therefore sincerely hope that the results of this experiment may be of practical utility in those cases, which are so frequently occurring, and are often so awfully fatal; it being the decided opinion of the professional gentlemen present on this occasion, that the free use of the oxygen gas was solely instrumental in restoring me to life.

Mr. Higgins himself had nearly once fallen a victim to a similar experiment with sulphuretted hydrogen, the effects of which, after recovering from a death-like insensibility, were painful and oppressive for many days.—*Philosophical Journal*.

M. Bucholz has recently analyzed a new bitumen found in the environs of Halle in Saxony, which he thinks strongly resembles the *resino asphaltum* described by Mr. Hatchett some years ago in the Philosophical Transactions. According to M. Bucholz, that which is found at Halle is composed of two resins, one of which is very soluble in alcohol, and approaches to the vegetable resins, forming 91 parts of the bitumen; while the other, which forms nine parts, has some analogy to amber.

The following are a few of the most characteristic marks of this substance: It is found in balls the size of an apple, enveloped in gray crystallized gypsum; in colour it is brownish, or pale yellow; fracture glossy, and very brittle: it does not become soft under the fingers; it even does not melt so easily as other resins, but while melting it exhales an agreeable smell, something like that of animal resin and styrax. M. Bucholz remarks that, as Mr. Hatchett could dissolve only 55 parts of the bitumen examined by him, while the former dissolved 91, it is extremely probable that this difference was occasioned by Mr. Hatchett's using common alcohol.

The nine grains which were insoluble in alcohol were dissolved, but with much difficulty, in boiling oil. It was fusible in a strong heat, and gave out the smell of common resin.

The 91 parts above mentioned, when separated from the alcoholic solution, were dissolved by ether, and formed a brownish tincture, while ether of a specific gravity of 0.710, rectified over muriate of lime, made scarcely any impression. Oil of turpentine and rectified petroleum have little or no effect upon this resin. Caustic potash dissolved in two parts of water does not dissolve this resin; but, when the lixivium is decanted, the residue of the resinous principle is dissolved in water, from which we can separate the resin by the addition of muriatic acid.—*London Medical and Physical Journal for July, 1814.*

Royal Society.—On Thursday, the 12th of May, a paper by Dr. BENJAMIN HAYNE on the Indian method of oxydizing silver by means of the juice of *jatropha cureas*, and on the milk of plants, was read. A piece of silver is heated to redness, wrapped in the leaves of any kind of tree, and then quenched in the juice of the *jatropha moluccana*. This process is repeated about twenty times, taking care never to fuse the silver. The metal becomes quite brittle, and crumbles to powder between the fingers. Dr. Hayne tried the same process, substituting water instead of the vegetable juice, and a similar effect was produced. From Dr. Hayne's account of the above process, Dr. Thomson suspects that the silver is not oxydized, but merely rendered brittle, and reduced to a fine powder; probably by combining with something which exists in the vegetable juice employed, or rather in the cow-dung in which the silver is heated. The only known oxide of silver is a dark greenish brown powder, which is reduced to the metallic state by a very moderate heat. If the vegetable juice merely communicated oxygen, it is obvious that that principle would be driven off every time the metal was heated to redness, so that the process would never advance; but if the vegetable juice or cow-dung employed, supplied sulphur, or any analogous principle, we can see how the repeated heatings would facilitate the combination, and how fusion would retard it.—*Ibid.*

Extract of a letter from M. Van Mons to Mr. Tillock.

[From the Philosophical Magazine and Journal for January, 1815.]

SIR,

"You are probably acquainted with the new discoveries made at Milan, by Messrs. Moscati and Maury, relative to the sun, its diurnal or rotatory motion, its volcanos, &c. I send you a translation of the report published on this head; I also send you a note to what I have said on the metallo-fluores, and another on my new theory, which is that of caloric considered as a constituent part of all bodies containing oxygen, displaced in the combinations and displacing itself in the decompositions. Afterwards I admit hydrogen reduced into its gas into all the combustible bodies, and into the metals, and subsaturated in all bodies which can, in their quality of bases, contract combinations. Hydrogen gas is a simple body; oxygen gas is composed of equal parts of oxygen and of caloric: the primitive material of the globe, and without doubt the substance of the other planets, also consists of equal parts of oxygen and hydrogen, without the least quantity of caloric, which would break this relation: water is oxygen gas displaced in the ratio of $\frac{2}{1\frac{1}{2}}$ from its caloric by two of hydrogen, and there result in this way 15 parts of oxygen, 13 of caloric, and 2 of hydrogen. The metals compose the primitive matter of the globe, with more or less hydrogen, and still without the least portion of caloric. The acidifiable combustibles are dry acids and hydrogen; the salifiable combustibles, or metallo-fluores, are an acid and the metals; the acidifiable burners (*comburans*) are dry acids and oxygen; the common acids are dry acids and water; and the dry acids themselves are peculiar combustibles in which the hydrogen is saturated by at least double the quantity of oxygen that it is in water; which may combine all the other bodies, but which cannot be put out of combination. All the other bodies are compounded of the latter. Water is decomposable by luminous caloric only; and when it oxidates bodies, it puts itself in the place of the equivalent of its contents in hydrogen, in the same way as, when hydrogen reduces bodies, it puts itself in the place of the water. I embrace the

whole domain of chemistry in this manner: Will you have the goodness to submit my ideas to the penetration of men of science in your country?

" M. Dobereiner, of Jena, not having found any soda which contained iodine, sought for this substance in sea water, where he found it. The *intactile powder* is iodate hyperoxygenated by ammonia, as *detonating oil* is muriate hyperoxygenated with the same alkali. The iodate of ammonia may be formed by simple oxygenation, whereas the muriate of ammonia requires to be hyperoxygenated.

" You will be soon made acquainted with an experiment in which muriate of ammonia, obtained by the combination of its gaseous elements, deposited all the water from its acid, taking up in its stead muriate of mercury and *oxydule*. This fact is decisive for the existence of oxygen in chlorine, and triumphant for Mr. Murray.

" You will also find that the Prussic acid gas, and water and alcohol impregnated with this gas, kill, in the most insignificant doses, and in three minutes, without convulsions, and as if a profound sleep had come on.

" I have ascertained that the essential oils which are distilled with alcohol or ether, cannot be again completely separated from those liquids, but retain at least the third of their weight: whether we attempt their precipitation by water, or try to make them float to the surface in the cold way.

" We have at Bruxelles a pile of Zamboni, which I have described in my French translation of Davy's Chemistry. It consists of disks of the diameter of a guinea, which are inclosed with pressure in two glass tubes of the form of columns. The substance of the disks is gilt paper sprinkled with native oxide of manganese, a vertical needle half a foot long, which is suspended about the sixth of its length towards the bottom, and oscillates between the two columns, striking at each half oscillation two bells with which the columns are surmounted. This movement, which is not much different in point of rapidity from the pendulum of a clock of the same length, has now existed for seven months: it is a true perpetual motion arising from a physical impulse. The circulation ascends this pile dry, and no chemical composition exhausts it.

"There has been lately found in the calcareous stone of Chimaii, which is a blue bituminous shell-stone, a living toad of supernatural size. Has this animal been surprised in the formation of the stone, or has the stone generated it? It is conceivable that, by exclusion from the air, vitality might be only suspended, but then the substance of the stone must have nourished it to make it grow."

State of Medicine in China.

M. Page, a physician of Orleans in France, has published a work on this subject. The following short account of the Chinese medical practice will probably amuse some of our readers:

"The Chinese employ emetics and purgatives, but very rarely; clysters are almost never used, because they regard them as too European, but they make a free use of cordials. The importation of opium is prohibited under pain of death.

"The Chinese in the treatment of the itch and eruptive diseases employ camphor and cinnabar also, with sulphur dissolved in woman's milk. They make use of borax in inflammations of the throat; it is reduced into powder, and blown upon the diseased part. They borrowed the use of the bark from the Jesuit missionaries.

"They were acquainted with inoculation long before us. They practise it in general by introducing into one of the nostrils cotton imbibed with variolous matter: the cotton is allowed to remain twelve hours, and in seven days at latest the disease appears.

"Like most Indian nations, they make a free use of aphrodisiacs, baths and mineral waters. They have springs saturated with alum and iron, but the greater number contain sulphur. Their physicians are not able to analyse them. Chemistry as well as natural history is in its infancy in China. But the Chinese have the good fortune to possess a species of *mesmerism* or animal magnetism, as practised by certain sects of Illuminati in Germany. The Chinese literati strive to put down this sect by ridicule; but they nevertheless find proselytes daily, to what they are pleased to call the *science of sciences*.

“The Chinese are not acquainted with the making of bread, for which they substitute boiled rice or maize: their wine is a strong liquor extracted from honey or fermented rice. They do not drink either coffee or chocolate—they have delicious melons, the species of which is unknown to us, some very delicate kinds of small onions, and several delicious plants; but they have no olives, strawberries, gooseberries, or potatoes.

“The diseases of stone and gravel are wholly unknown to the Chinese—in consequence, as they tell us, of the great quantity of tea which they drink.”*

Tannin.

M. Pelletier has published in the *Annales de Chimie* some observations with a view to show the imperfect state of our knowledge of this substance and its combinations with gallic acid. The various kinds of tannin which have been successively produced from various processes, are different in the greater part of their properties: they have nothing indeed in common, but the property of several animal substances, and forming with them insoluble combinations which are not susceptible of putrefaction, and have also the power of precipitating in a manner nearly similar even metallic solutions; but they are different in their taste, colour, solubility in water, &c. Pure tannin does not exist: the properties which are attributed to it, and by which it is characterized, belonged to several combinations which vegetable substances form. Why then, asks M. Pelletier, shall we continue to consider this as a distinct principle?

Is it because it precipitates several metallic oxides from their solution? Almost all vegetable extracts have the same property, and we know that these extracts are at least triple combinations of acid, the colouring substance, and of vegetable matter, because the precipitates which form the tannin matter in those solutions are constantly coloured and sometimes very brilliant. But if we reflect that gallic acid always accompanies tannin, and that the colours of the precipitates

* The great consumption of tea in England is well known: are the affections arising from urinary calculi less frequent in that country? We may form some idea on this subject by reading the papers of Brande, Home, and Hatchett.—*Note by the French Editors of the Annale de Chimie.*

furnished by the tanning matter, and the metallic solutions, are the same with those manifested by the addition of the gallic acid, and the same metallic solutions; may we not conclude with M. Thenard, that the colouring of these precipitates is owing to the gallic acid, from which we can never entirely separate tannin? or is it the property which tannin has of combining with animal matter and preserving it from putridity? A multiplicity of combinations of vegetable matter also possess this property; and without mentioning the astringent matter formed by the action of mineral acids on charcoal and several vegetable substances, or the experiments of M. Chevreul on *hematine* (which acquired this property) and who disbelieves the existence of tannin, I shall mention some facts to prove that gallic acid can combine with several vegetable substances, and thus acquire the properties of tannin. If we put a solution of pure gelatine in gallic acid, no precipitate is formed: this acid does not produce any turbidness in the gummy solutions, but they cannot be resolved without immediately becoming turbid in white flakes which are soon precipitated. Among the pharmaceutical extracts there is a great number which do not contain the astringent principle, and which form no precipitate in the solution of gelatine; but by the addition of gallic acid they acquire this property. The same phenomenon does not take place with the other vegetable acids, which on the contrary seem to oppose themselves to the precipitation of gelatine.

We know that pure gallic acid forms no precipitate in a solution of sulphate of iron at the maximum, but it there becomes a beautiful deep-blue colour. Infusion of nut-galls produces, on the contrary, a precipitate which is attributed to tannin; but gallic acid of itself acquires the property of partly precipitating the iron from this solution when it is combined with extractive matter: most of the vegetable infusions unite with gallic acid and gelatine, the same as the extractive substances, for which we can assign no reason. The phenomenon is very perceptible with the cold infusion of saffron: the properties of these precipitates cannot be absolutely identical; they must differ according to the nature of the substances which enter into each combination: that formed by gum arabic, gelatine and gallic acid is the only one which I have hitherto been able to exa-

mine: it differs from the others by its extreme adherence to water, with which it assumes an oleaginous form, and partly passes through the paper filter. This combination, it appears, may exist in different proportions, which I have not been able yet to determine, except that it does not putrefy: whereas in the others, a fetid smell arises in a few days, and much later than if the gelatine was pure. The combinations of the gallic acid with gelatine and extractive matter unite less freely with water, and resemble much the precipitates formed by the infusion of nut-galls in the gelatinous solution.

Verdigris.

Senor Orfila has found that great quantities of dry sugar taken into the stomach of a patient who had recently swallowed verdigris, or eaten food prepared in untinned copper vessels, have proved an immediate and effectual antidote to the cupreous poison. In cases where the poison has remained so long in the stomach as to produce inflammation, the usual remedies for the latter must be conjoined with the sugar.

Detonating Oil.

The original discovery of this substance, which has been claimed by M. Dulong, and actually discovered by Davy, appears to belong to M. Van Mons of Brussels. This distinguished chemist, whose discoveries have often been appropriated by others, observed in 1793, the combination of ammonia with oxygenated muriatic acid. Nineteen years before the experiments of Dulong or Davy, he announced his discovery to Gren, in the following terms, dated Messidor, an 4 (1796): "I have succeeded in combining ammonia with oxymuriatic acid without any decomposition whatever of these two bodies. This new salt detonates at a certain degree of heat, whether in the open air, under water, or under other liquids by which it is not decomposed*." The same facts were stated in Dandolo's

* "Es ist mir gelungen das ammiak mit der oxigenirten salzsaure zu verbinden ohne dass dabey eine zersetzung dieser substanzen vorgegangen waere. Dieses neues salz detonirt beg einem gewissen grad de waerme, sowohl in freyer luft als unter wasser und anderen tropfbaren flussigkeiten die es nicht zersetzen."—*Neues Journal der Physik.* Bd. 3. s. 230.

Italian translation of Van Mons's Chemical Philosophy, "Il muriato ossigenato d'ammoniaco si reduce à suoi principie detona à conforza anche sotto l'acqua, colla semplice impressione del calore." Van Mons's *Mémoire*, &c. to the Royal Academy of Sweden, p. 224—5.

Philosophical Transactions.

The Philosophical Transactions, part ii. for 1814, has just made its appearance, and the following are its contents:

15. On a new principle of constructing His Majesty's ships of war. By Robert Seppings, Esq. one of the Surveyors of His Majesty's Navy. Communicated by the Right Hon. Sir Joseph Banks, Bart. K. B. P. R. S.—16. Remarks on the employment of Oblique Riders, and on other alterations in the construction of Ships. Being the substance of a Report presented to the Board of Admiralty, with additional demonstrations and illustrations. By Thomas Young, M.D. For. Sec. R.S.—17. Some further Observations on Atmospherical Refraction. By Stephen Groombridge, Esq. F.R.S.—18. Propositions containing some Properties of Tangents to Circles; and of Trapeziums inscribed in Circles, and non-inscribed. Together with Propositions on the Elliptic Representations of Circles, upon a plane surface, by Perspective. By Richard Hey, L.L.D.; late Fellow of Sidney Sussex and Magdalen Colleges, in the University of Cambridge. Communicated by the Rev. Edward Balme, M.A. F.R.S.—19. On new Properties of Light exhibited in the optical Phenomena of Mother of Pearl, and other Bodies to which the superficial structure of that Substance can be communicated. By David Brewster, LL.D. F.R.S. Edin. and F.S.A. Edin. In a Letter addressed to the Right Hon. Sir Joseph Banks, Bart. K.B. P.R.S.—20. An improved method of dividing Astronomical Circles and other Instruments. By Captain Henry Kater. Communicated by Thomas Young, M.D. For. Sec. R.S.—21. Results of some recent Experiments on the Properties impressed upon Light by the Action of Glass raised to different Temperatures, and cooled under different circumstances. By David Brewster, LL.D. F.R.S. Edin. and F.A.S.E. in a Letter to the Right Hon. Sir Joseph Banks, Bart. K.B. P.R.S. &c.—22. Consi-

deration of various Points of Analysis. By John F. W. Herschel, Esq. F.R.S.—23. Observations on the Functions of the Brain. By Sir Everard Home, Bart. F.R.S.—24. Further Experiments and Observations on Iodine. By Sir H. Davy, LL.D. F.R.S. V.P.R.I.—25. Observations respecting the natural Production of Saltpetre on the walls of subterraneous and other Buildings. By John Kidd, M.D. Professor of Chemistry at Oxford. Communicated by William Hyde Wollaston, M.D. Sec. R.S.—26. On the Nature of the Salts termed triple Prussiates, and on Acids formed by the union of certain Bodies with the Elements of the Prussic Acid. By Robert Porrett, jun. Esq. Communicated by William Hyde Wollaston, M.D. Sec. R.S.—27. Some Experiments on the Combustion of the Diamond and other carbonaceous Substances. By Sir Humphry Davy, L.L.D. F.R.S. V.P.R.I.—28. Some account of the fossil Remains of an Animal more nearly allied to Fishes than any of the other Classes of Animals. By Sir Everard Home, Bart. F.R.S.—29. On an easier Mode of procuring Potassium than that which is now adopted. By Smithson Tennant, Esq. F.R.S.—30. On the influence of the Nerves upon the Action of the Arteries. By Sir Everard Home, Bart. F.R.S.—31. On the Means of producing a double Distillation by the same Heat. By Smithson Tennant, Esq. F.R.S.—32. An Account of some Experiments on Arterial Heat. By John Davy, LL.D. F.R.S.—*Philosophical Magazine and Journal*, November, 1814.

Ointment for the Cure of Itch.

We some time ago noticed the employment of baths, prepared from the sulphuret of potass, for the cure of herpes; the same substance is also used with success in the form of ointment to cure the itch, as in the following formula. Sulphuret of potass, ℥vj. white soap, ℥ij. poppy oil, ℥iv. aromatic essential oil of any kind, ℥ij. The sulphuret of potass is to be pounded in an iron mortar slightly heated, the powder to be passed through a sieve, and to be kept in a dry well stopped vial. The soap, finely sliced, is to be melted in an earthen vessel placed

in a sand bath; the liver of sulphur being rubbed in a marble mortar, the mixture of oil and soap is to be gradually added. When they are so thoroughly mixed, that lumps of soap can no longer be discovered, the remainder of the oil, together with the essential oil, is to be poured in, and the whole thoroughly incorporated. The ointment thus made, is to be kept in a close vessel; it is of a greenish colour and becomes white by the contact of air; its consistence nearly that of cerate. The odour of the sulphuretted hydrogen gas is entirely concealed by that of the volatile oil, which is the only reason for employing this latter. The mode of using this ointment consists in rubbing half an ounce of it upon the parts affected, night and morning; care must be taken not to suffer the ointment to remain too long a time at the bend of the elbows, or armpits, or groins, lest it should irritate and excoriate the skin. If the eruption is a simple itch, no other application, external or internal, is requisite; eight days is generally sufficient for the cure. M. Jadelot has made use of this ointment, for a whole year, in the hospital for children, without experiencing any return of the complaint or any inconvenience. This application is very easy and not at all expensive, adapted to all ages and professions, and does not require any confinement, or interruption from business.

M. M. PLANCHE and BOULLAY have recommended the sulphuretted soap of soda as an effectual cure for the itch. The following is their method of preparing it: Animal soap, $\bar{\text{z}}$ ij. Alcohol at 38° , $\bar{\text{z}}$ iv. Dissolve in a gentle heat, and before the solution is quite cold, add hydrogenated sulphuret of soda concentrated to 36° (Baumé) $\bar{\text{z}}$ i. incorporate them well and preserve the mixture in a well stopped bottle. This sulphuretted soap is of a fine yellow colour, semi-transparent, having the aspect and consistence of solid jelly. The sulphur contained in it is in such a minute degree of division as fits it more readily for absorption; it melts with facility by the heat of the hand when employed in friction, and is very soluble in water when it is wished to make a bath from it. In either case it renders the skin soft and supple. Compositions containing the sulphuret of potass are liable to much inconvenience and uncertainty, which are obviated by making use of the sulphuret

of soda. This latter may be conveniently prepared by dissolving to saturation sublimed sulphur in a solution of pure soda. This sulphuret has the advantage of being always identical in its properties, and may be kept a long time without undergoing any alteration; it is not sensibly alkaline, and forms with all acids soluble salts which do not injure the skin. It appears that all natural sulphuretted minerals have soda for their base.

Dr. THOMANN, a German physician, uses the following ointment for the cure of the itch. Powder of fresh charcoal, ʒij. fresh butter and axunge, of each ʒiij. These are to be rubbed together, until they are completely incorporated. The patient is first to use a warm bath, and the next day to rub the affected parts with two drachms of the ointment; he is afterwards to wash himself with warm soap and water. The day following, the friction is to be repeated, and in about five or six days the disease will be radically cured.—*London New Medical and Physiological Journal for Feb. and March, 1815.*

Mr. ACCUM has in the press, *A Treatise on Gas Light*; exhibiting a summary description of the apparatus and machinery best calculated for illuminating streets, houses, and public edifices, with carburetted hydrogen or coal gas; together with remarks on the utility, safety, and general nature of this new branch of civil economy. The Treatise will be illustrated with geometrical and perspective designs, exhibiting the structure of the larger gas light apparatus now successfully employed for lighting the streets and houses of the metropolis, as well as the smaller apparatus used for lighting manufactories and private establishments.—*Ibid. for March, 1815.*

From the last literary intelligence from London, it appears that the tenth volume of the French Dictionary of Medical Sciences, (of which we have given some account in this number) had reached that place. This volume embraces only the very commencement of the letter E. A considerable work on Medical Botany is announced, as a companion to the French

Dictionary; the title is *Flore du Dictionnaire des Sciences Medicales*, of which five parts had made their appearance in the month of May last.

DIED, at Philadelphia, on the fifth of August, 1815, in the 42d year of his age, Dr. JAMES GLEN, for several years past a Practitioner of Physic in this city. By the premature death of this gentleman, society is deprived of the services of one of its most useful and respectable professional characters.

Dr. GLEN was a native of Savannah, in the State of Georgia, and descended from one of the most ancient and respectable families of that state. After the completion of his medical education in Philadelphia, he was induced, by the delicacy of his constitution, and its inability to support a southern climate, to settle in Pennsylvania, and selected for his residence the county of Montgomery; where, by his diligence, skill and fidelity, his practice soon extended over an extensive district of country. After the expiration of some years, believing his health to be permanently established, he returned to his native state, where the liberal patronage of numerous and respectable connections, opened to him an extensive field of lucrative practice.

But he was constrained, in the course of a few years, by the declining state of his health, to return to the more congenial climate which he had left; and after spending some time in the village of Holmesburg near Philadelphia, where he married into a respectable family, he established himself in Philadelphia—here he was enabled to devote himself with renewed zeal and usefulness to the duties of his profession, and more particularly and immediately to one of its most interesting branches.

Such was the situation of this gentleman, when the hand of death, by a fatal casualty, suddenly arrested him in the career of usefulness. This event was produced by a fall from his chaise, and a consequent concussion of the brain, which, after a period of eleven days, terminated his existence.

As a professional character, the unremitting and skilful labours of Dr. GLEN were justly proved and appreciated by the

high confidence reposed in him by all those who were placed under his medical care.—Uniting an unusually sound judgment with the advantages of a liberal education, and a habit of cool and dispassionate reflection, he preserved himself, throughout his practice, alike free from the trammels of ancient dogmas, and the more dangerous and seductive influence of untried and visionary theories—this rendered him a safe and successful practitioner.

In the various relations of private life, and in the exercise of all the social duties, those only could justly estimate the worth of this amiable man, who were within the more immediate circle of his intimate and selected friends. With a mind under the habitual influence of the benevolent affections, and a sincere good will for all mankind, he steadily pursued, amidst the vicissitudes of life, the tranquil and modest tenor of his way; and in the strict observance and discharge of his *sacred duties*, he was truly exemplary.

Seldom indeed, have the afflictive dispensations of Providence been more forcibly brought home to our feelings, than in the sudden removal of this amiable man from the midst of society, and from the bosom of his infant family.

At Manchester, England, aged 52, JOHN FERRIAR, M.D. one of the physicians of the Manchester Infirmary. The eminent rank which he held in his profession was founded on a long and general experience of the efficacy of his advice. He was endowed by nature with an acute and vigorous understanding, which he had matured, by a life of diligent study, and of careful and well digested observation, into a judgment unusually prompt and correct in its decisions. The purposes of his sagacious mind were pursued also with a steadiness of determination which generally secured their accomplishment; and unexpected difficulties in the treatment of diseases he encountered with firmness, and with great fertility of invention. As a professional author he had obtained a high rank, and the world is indebted to him for a large fund of valuable knowledge, conveyed in a style, which, for perspicuity, strength, and simplicity,

is a model to medical writers. These works will be his durable monument as an improver in the art of medicine. His attainments as a polite scholar will be preserved by writings in which he displayed correct taste, extensive reading, and original views of his subjects. In the common relations of life he was a man of inflexible honour and integrity, a warm and steady friend, and a tender and indulgent parent.—*London Monthly Magazine, March, 1815.*

We have to lament the death of that celebrated and truly deserving character, JAMES WARE, Esq. of Bridge-street. This gentleman who has contributed so much to improve the practical part of surgery in his department as an oculist, was not more distinguished as a surgeon than for his enlarged philanthropy. In partnership with the late Mr. Jonathan Wathen, he was probably the first English surgeon who separated this branch of the art from general practice. When Mr. Phipps, grandson to Mr. Wathen, became of an age to take part in the practice, the two former separated, Mr. W. uniting with his grandson. It was soon found that the town was large enough for all three. The partners removed to the west, and Mr. Ware continued for the remainder of his life in the city, with a country house at Turnham Green, which enabled him to attend his patients in the west without inconvenience. Apparently of a delicate frame, a premature old age assailed him, though constantly prudent in every part of his life. We shall, in our next, give a more detailed account of his history, but cannot conclude these few remarks without mention of his exemplary liberality to the Society for the Relief of Widows and Orphans, of which he was among the early founders, and for several years President. Besides his customary donation, he presented them during life with a fund, the interest of which was divided among such of the directors as attended the quarterly courts with punctuality, and staid the whole time of necessary business.

We have in one of the newspapers a remark which would lead us to suppose, that Mr. Ware had relinquished the use of laudanum altogether in inflammation of the eye. As his

experience increased, it is probable that he varied his remedies; but the *vinous* solution of opium was, we believe, always retained.—*London Medical and Physical Journal*, May, 1815.

It is with much concern that we announce the death of SMITHSON TENNANT, Esq. F.R.S. and Professor of Chemistry in the University of Cambridge; a man in whom genius, talents, and virtue, were united in their highest forms. Although his industry was checked by a frame naturally weak, and a languid state of health, his acquirements in science were general, in chemistry most profound, with a correctness not exceeded by Woolaston.

The circumstances of Mr. Tennant's death were most afflictive. He was returning from France, where he had been several months, and was waiting at Boulogne for a favourable wind. He had actually embarked on Wednesday, the 22d of February, but the vessel was obliged to put back: and it was determined, if the weather should be tolerable, to make another trial in the evening. During the interval Mr. T. proposed to a German officer of distinction, whom he had accidentally joined on the road, and who was also going to England, to ride with him to Bonaparte's Pillar, near Boulogne. In returning he deviated a little to look at a fortification near the road. But as they were attempting to pass a draw-bridge, which, owing to some neglect, was not properly secured, the bridge gave way, and they were precipitated into the trench. The officer fortunately escaped without any serious hurt; but Mr. Tennant was found fallen under his horse, and was taken up speechless, his skull and one of his arms being considerably fractured. He was conveyed with difficulty to the hospital at Boulogne, as the nearest and most convenient place to receive him, and expired in half an hour. His remains were interred at Boulogne.—*Ibid.*

RECENT PUBLICATIONS.

The History of the Small Pox, traced from its oriental origin in Arabia, Africa, Europe, and America, and interspersed with historical and biographical incidents. By James Moore, director of the National Vaccine Establishment.

Reflections on Fever, intended to point out the principles upon which a systematic and useful method of treatment might be established. By Robert Calvert, M. D. 8vo.

Observations on the Bulam Fever, the disease which has of late years prevailed in the West Indies, on the coast of America, at Gibraltar, Cadiz, and other parts of Spain, with a collection of facts proving it to be a contagious disease. By William Pym, Esq. 8vo.

A View of the Relations of the Nervous System, in Health and in Disease; containing selections from the dissertation to which was assigned the Jacksonian prize for the year 1813; with additional illustrations and remarks. By Daniel Pring. 8vo.

Medical and Surgical Remarks, including a description of a simple and effective method of removing Polypi from the Uterus, Tonsils from the Throat, &c. Likewise Observations on the different modes of Opening the Bladder, in retention of urine, from obstructions in the Urethra and Prostate Gland; and a description of a more safe and effectual method of performing the Operation, illustrated by Cases. By Edward Granger. 8vo.

Sketch of the new Anatomy and Physiology of the Brain and Nervous System. By Thomas Forster, F. L. S. 8vo.

Researches on Consumption and other Disorders of the Lungs; from the French of G. L. Bayle, D. M. P. By William Barrow, M. D. illustrated by plates. 8vo.

Mr. G. J. Guthrie has published a work on Gun Shot Wounds of the Extremities, requiring the Different Operations of Amputation, with their After Treatment, establishing the advantages of amputation on the field of battle, to the delay usually recommended; exhibiting the improvements introduced

by military surgeons in the operations of amputation at the hip joint, shoulder joint, thigh, arm, leg, foot, and hand, during the Peninsular war.

INTENDED PUBLICATIONS.

Shortly may be expected, a History of the Pestilential Disorder that broke out in Andalusia in 1800, with detailed accounts of the fatal epidemics at Gibraltar in 1804, and at Cadiz in 1810 and 1813; to which will be added, observations on the remitting and intermitting fever in the military hospitals at Colchester after the return of the troops from Zealand in 1809: by Sir James Fellowes, physician to the forces, and inspector of military hospitals.

Mr. Astley Cooper is preparing for republication his work on the Anatomy and Surgical Treatment of Hernia.

Sydenham Edwards, Fellow of the Linnean Society, and late designer of the Botanical Magazine, is now publishing in monthly numbers, *The Botanical Register*, each number to consist of eight coloured plates, accompanied by their history and mode of treatment. The designs to be made from living plants.

INTENDED AMERICAN PUBLICATIONS.

Thomas Dobson will publish in a few days, an edition of MURRAY'S MATERIA MEDICA, with Notes by Dr. CHAPMAN, Professor of Materia Medica in the University of Pennsylvania; in two volumes octavo.

Now in the press, *Prodromus Floræ Philadelphicæ; Plantarum quæ hactenus exploratæ fuere, quæque in ipso opere ulterius describentur, exhibens enumerationem: or, Prodromus of the Flora Philadelphica; exhibiting a list of all the Plants to be described in that work, which have as yet been collected.* By William P. C. Barton, M. D. Fellow of the College of Physicians of Philadelphia; Member of the American Philosophical Society, &c.

This work contains a list of about four hundred and fifty genera of indigenous and commonly cultivated plants, collected within a circuit of ten miles around the city of Philadelphia; and though purporting, according to the title, to be a *mere catalogue*, contains beside, brief descriptions of the essential generic characters, the form of the leaves, and the natural families of Jussieu. It will serve as a Manual for the students of Botany, as well as botanists, who make excursions in the vicinity of this city in quest of plants.

This Prodomus will be published about the first week in November next, when it may be had *only* of the author, No. 222, Walnut Street, and at the Pennsylvania Hospital; price one dollar and fifty cents. The author has printed but a small edition, and as nearly one half of the number of copies printed, is already subscribed for, those persons who are desirous of possessing the work, are informed, that subscribers who send in their names to the author after the appearance of this notice, and before the publication of the work, will purchase it at one dollar and twenty-five cents.

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